This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Digitized by Google

Digitized by Google

Digitized by Google

MEDICAL AND SANITARY REPORT

OF THE

NATIVE ARMY OF BENGAL

FOR THE YEAR

1875.

FRAMED ON THE WEEKLY AND ANNUAL RETURNS, ON THE REPORTS OF REGIMENTAL MEDICAL OFFICERS, AND ON THE INSPECTION REPORTS OF DEPUTY SURGEONS-GENERAL.

WITH STATISTICAL TABLES AND APPENDIX.

Compiled in the Office of the Surgeon-General, Indian Medical Service.

CALCUTTA:
OFFICE OF THE SUPERINTENDENT OF GOVERNMENT PRINTING.
1876.

Digitized by Google

CALCUTTA:

PRINTED BY THE SUPERINTENDENT OF GOVERNMENT PRINTING,
8, HASTINGS STREET.

Digitized by Google

No. 1113.

FROM

THE SURGEON-GENERAL, INDIAN MEDICAL DEPARTMENT,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
MILITARY DEPARTMENT.

Fort William, the 21st November 1876.

SIR,

I HAVE the honor to forward, for submission to the Right Hon'ble the Governor-General in Council, the Medical and Sanitary Report of the native army of the Bengal Presidency for the year 1875, the compilation of which has been conducted, under my superintendence, by Surgeon-Major J. Browne, M.D., who officiates as my Secretary, during the absence on furlough of Surgeon K. McLeod, M.D. Compilation of report.

2. While trying to avoid all useless repetitions, I have again found how difficult it is to condense or abbreviate the sanitary reports of medical officers, inasmuch as they contain a vast amount of information of a special kind, relating to the varying sanitary and climatic conditions under which the native army has been placed in this presidency; and I am, moreover, of opinion, that any attempt at a more complete abridgment, would only tend to lessen that wholesome spirit of emulation which helps to stimulate the interest taken by most medical officers in the preparation and compilation of these reports. Difficulties in condensing the sanitary reports.

3. In statement No. I is shown the strength of the Native Army in the Bengal Presidency, including the Madras troops serving within it, as compiled from the weekly and annual returns of every regiment and battery composing it. In this statement, the strength of the army is shown as sub-divided into "present" and "absent;" the former gives the numbers which supplied the admissions into hospital, while the latter shows the numbers absent on furlough, sick leave, &c., and those small detachments from which no statistical returns were received, as they were not under the charge of any special medical officer, or subordinate. The strength of the Bengal native troops in this presidency during 1875 was in excess of that of 1874 by 304 men, while the Madras troops were less by 151. The ratio of absentees in the Bengal army was 14·6 per cent. of total strength, and of the Madras troops 5·6. Such Strength of the army. Strength sub-divided into "present" and "absent."

STATEMENT No. I.

	Strength.		
	Present.	Absent.	Total.
Regular Army	39,411·4	5,433·9	44,845·3
Central India Force	4,267·2	1,415·5	5,682·7
Punjab Frontier Force ...	9,938·4	2,328·1	12,266·5
TOTAL ...	53,617	9,177·5	62,794·5
Madras Army	3,466·6	207·3	3,673·9
GRAND TOTAL ...	57,083·6	9,384·8	66,468·4

Digitized by Google

a marked difference in the numbers absent is in a great measure owing, I presume, to the Madras sepoys having their families with them, as well as to the distance of their present stations in Bengal from their homes in Madras.

Ratio of admissions and daily sick.

4. Statement No. II shows the ratio of admissions and daily sick per cent. of the strength "present," or that from which the admissions into hospital were furnished; but the death-rate represents the percentage of *total* deaths on *total* strength.

STATEMENT No. II.

	Per cent. of strength.		
	Admissions.	Daily sick.	Deaths.
Regular Army	123·03	3·99	1·56
Central India Force ...	91·98	2·98	·96
Punjab Frontier Force ...	167·24	4·63	2·17
Army of Bengal	128·75	4·03	1·63
Madras Troops	89·77	2·62	1·42

The ratio of admissions and daily sick of both the Bengal and Madras troops was less than in 1874, but that of mortality has been slightly higher; and this excess was mainly dependent on the death-rate of the men of the Punjab Frontier Force, which was ·81 per cent. higher than in 1874. The ratios of the Madras troops, while again contrasting favorably with those of the Bengal army as a whole, do not vary much from those of the Central India Force, a fact tending to prove that an equable climate, in which the range of temperature is not excessive, is conducive to the preservation of health. The Punjab Frontier Force still continues to be the least healthy portion of the Bengal army; but yet its ratio of sickness and mortality has not been at all excessive, not higher than might have been expected to result from service in a climate in which extreme ranges of temperature prevail, as well as from duties which occasionally were of a very arduous nature, and entailed no small amount of exposure on those employed on them. The regular army ranked next as regards sickness and mortality. The Central India Force, while slightly in excess of the Madras troops as regards sickness, was also somewhat under them in the death-rate. But on the whole, and perhaps for the reasons already mentioned, the statistics of the latter are the most favorable.

Number ineffective from sickness.

The number of men constantly in hospital, whose services were therefore lost to the Government, was 2,166, or equal to 3·02 battalions of 715 men against 3·27 in 1874. Each case spent an average of 11·02 days in hospital, and each sepoy of the entire army 13·03, against 11·2 and 13 in 1874.

Sick leave.

In addition also, 1,267 men, or 2·02 per cent. of strength, proceeded on sick leave against 1·6, 2·08, 2·4, 2·10, and 1·91 in the preceding five years. The number of days spent by these men on sick leave was 164,862, which gives an average of 451·6 men constantly absent on this account, or equal to ·63 of a battalion. It is thus brought out that there were 2,617·6 men continually ineffective from sickness, or 4·88 per cent. of strength (present)—a number equal to a loss of 3·6 battalions of 715 men. In 1874, the ratio of men constantly ineffective was 4·86 per cent.

Mortality.

5. The total number of deaths was 1,026 against 819 in 1874; of these, 674 against 536 occurred in hospital; 33 against 25 in the lines; and 319 against 258 amongst men away from the regiments, or those who constituted the strength "absent" in Statement No. I. The deaths occurring with regiments, calculated on the strength "present," amounted to 1·32 per cent. against 1·06 in 1874, and 1·35, 1·03, 1·76, 1·45, and 1·45 in the five previous years. The percentage of deaths in hospital to the number of sick treated was ·94 against ·74, ·93, ·92, 1·05, and ·88 in the preceding five years. The Punjab Frontier Force, as already observed, had the highest death-rate; the regular army came next, then the Central India Force, and the Madras troops had the lowest.

Strength and health of European officers.

6. The average strength of the European officers of the native army was 578; from this strength there were 273 admissions and 3 deaths; the former at the rate of 47·23 and the latter ·51 per cent. of average strength. The principal causes of admission were fevers, injuries, bowel complaints, gout, and liver affections; those causing deaths were gout, sun-stroke, and hepatitis.

Digitized by Google

7. Statement No. III shows the proportion of men in the native army whose ages were under 25 years, between 25 and 40, and above 40, with the death-rate of each. It will be observed, as was the case in 1874, that the cavalry contains a larger proportion of aged men, the artillery of adults, and the infantry of adolescents; according to the ages of the men, the regular army stands first in efficiency; next comes the Punjab Frontier Force; and then the Central India Force. The death-rate has, as already observed, increased steadily with age and was at a higher rate for all ages in the Punjab Frontier Force than in either the regular army or Central India Force. Mortality according to age.

STATEMENT No. III.

1	2	3	4	5	6	7
	Under 25. Adolescents.		25—40. Adults.		Above 40. Aged men.	
	Number.	Death-rate.	Number.	Death-rate.	Number.	Death-rate.
Artillery ...	24·50	·67	59·93	1·10	15·56	4·25
Cavalry ...	27·57	·50	52·85	·96	19·57	1·97
Infantry ...	32·58	1·57	58·31	1·81	9·11	2·29
Regular Army ...	31·96	1·41	57·58	1·59	10·46	1·85
Central India Force	27·04	·52	57·64	1·08	15·32	1·61
Punjab Frontier Force.	32·07	1·63	55·94	2·15	11·99	3·74
Total ...	31·54	1·38	57·27	1·65	11·19	2·02

8. Statement No. IV exhibits the vital statistics of the several branches of the native army; this table merely reproduces in detail Statements Nos. I and II. It will be observed that the artillery has been much more sickly than either of the other branches, but that the infantry has had a higher death-rate; and these results are quite in accordance with former observations. The cavalry regiments have again exhibited the smallest sick rate; but this is what might be expected to result from the nature of their duties, and from the fact of their being recruited from a better class, while they also, on account of their caste, are generally more comfortably circumstanced as regards their dietary and clothing, and on this account are consequently better able to resist the effects of climate. Statistics of the several branches of the army.

STATEMENT No. IV.

	Strength.			Per cent. of Strength.		
	Present.	Absent.	Total.	Admissions.	Deaths.	Daily sick.
Artillery ...	493·4	112·	605·4	231·86	1·48	5·59
Cavalry ...	9,841·5	2,351·5	12,193·	119·18	1·03	3·61
Infantry ...	43,282·1	6,714·	49,996·1	129·76	1·78	4·15
Total ...	53,617·	9,177·5	62,794·5	128·75	1·63	4·03

9. Statement No. V exhibits the composition of the native army according to caste. It will be observed that the proportions of Hindoos, Mussulmans, and Christians were 69·90, 29·60, and ·48 per cent. of strength, respectively. The Hindoos, as is generally the rule, have had the highest death-rate, while the Mussulmans have had the lowest; the difference in favor of the Mussulmans is not a very considerable one, only ·38 per cent., or 3·80 per mille, and is, I believe, in some measure, due to the more varied and generous dietary used by them; meat generally forms a portion of it. Caste of the men in the native army.

STATEMENT No. V.

	Strength.	Death-rate.
Hindoos	43,841	1·75
Mussulmans	18,566	1·37
Christians	306	1·63

10. The strength of the native army (excluding Madras troops) underwent but little change during the year. The additions by recruiting amounted to 6,065, or 9·61 per cent. of average strength, and the permanent loss to 6,120 or 9·75 per cent. The corresponding figures for 1874 were 11·02 and 10·35. Of the 6,120 men who left the service from various cases, 2,069 or 33·81 per cent. were invalided, 1,527 or 24·75 per cent. were discharged by commanding officers at their own request, 1,026 or 16·76 per cent. died, 767 or 12·53 per cent. were removed for physical disability, and 731 or 11·94 per cent. for misconduct, &c.

Digitized by Google

The percentages which these events bore to the average strength of the army are shown in the table in the margin, and for sake of comparison, those of 1874 are also given. It will be remarked that the percentage of men invalided, discharged at their own request, and for misconduct, was higher than in 1874, while the percentage of those who were discharged for physical disability, as well as the number of those who died, was lower.

	1874.	1875.
Invalided	3·70	3·30
Discharged by Commanding Officer at their own request	2·73	2·59
„ for physical disability	1·08	1·22
„ for misconduct, &c.	1·53	1·16
„ died	1·31	1·63

Statistics compared with those of ten previous years.

11. In Statement No. VI, the statistics of the native army (excluding the Madras troops) for 1875 are compared with those of the ten preceding years. The statistics for the year 1865 refer to the regular army only, but the remainder include those of the entire native army. The comparison is very favorable to the statistics of 1875, inasmuch as the rates of sickness and mortality were below the average of the preceding decennial period. The year 1875 was, however, not remarkable for any unusual sickness; but the native army has seldom suffered from disease in a severe epidemic form.

STATEMENT No. VI.

1875 compared with ten preceding years.

Years.	Per cent. of strength.		
	Admissions.	Deaths.	Daily average sick.
1865* ...	147·5	2·07	4·48
1866 ...	120·5	1·75	4·38
1867 ...	131·2	1·78	4·40
1868 ...	111·8	1·65	3·72
1869 ...	162·5	2·49	4·94
1870 ...	159·8	1·86	4·73
1871 ...	133·1	1·83	4·26
1872 ...	152·6	2·01	4·54
1873 ...	132·3	1·74	4·17
1874 ...	132 9	1·31	4·23
Average ...	138·43	1·85	4·38
1875 ...	128·75	1·63	4·03

* For the regular army only.

Sickness and mortality in each command of the army.

12. Statement No. VII exhibits the sickness and mortality of the native army during 1875 in each of the divisional and district commands in the presidency:—

STATEMENT No. VII.

Military Commands.	Serial number.	Daily sick per cent. of strength.	Serial number.	Admissions per cent. of Strength.	Serial number.	Deaths per cent. of strength.
Presidency District	1	6·68	5	142·66	1	2·91
Eastern Frontier District	2	4·83	4	156·37	3	2·33
Punjab Frontier Force	3	4·63	2	167·24	4	2·18
Peshawar District	4	4·59	1	180·55	2	2·34
Lahore Division	5	4·54	3	165·09	5	2·13
Sirhind Division	6	4·04	6	130·68	8	1·07
Rajpootana	7	3·89	10	101·86	9	1·05
Oudh Division	8	3·82	9	114·86	11	·87
Gwalior District	9	3·77	8	115·51	7	1·45
Saugor District	10	3·42	7	119·75	15	·22
Meerut Division	11	3·21	11	97·77	6	1·56
Allahabad Division	12	2·92	14	71·04	14	·69
Rawal Pindi Division	13	2·85	12	89·59	13	·72
Central India	14	2·70	13	87·39	10	1·02
Rohilcund District	15	2·62	15	69·61	12	·81

In my report for last year I reviewed the sickness and mortality in each of the several commands of this presidency, but on the present occasion shall take only a passing notice of them. I shall, however, further on, comment more fully on the various hygienic conditions which, conjoined with climate, may have injuriously affected the health of the troops.

Certain stations unhealthy for native troops.

13. It will most probably be acknowledged by all who have had experience of the various stations and climates in the Bengal Presidency, that service in the following portions of it will prove to be inimical to a high standard of health of

Digitized by Google

Hindoostani sepoys,—*viz.*, in Bengal Proper, in the Eastern Frontier District, in the Lahore Division, and in the Peshawar District. Such has been the case during 1875, as indeed it has been, as a rule, since the commencement of the publication of the vital statistics of the native army.

Stations in which sickness was most prevalent.

14. It will be observed that the ratio of sickness was highest in the Presidency and Eastern Frontier District, the North-Western Frontier, and in the Peshawar and Lahore Commands; and in each of them was above the rate of 4·03 per cent., which, in statement No. VI, is shown to have been the figure for the entire native army.

Mortality greatest in certain stations.

15. The mortality, too, was highest in the same commands, although they do not stand in the same order as they did for sickness; and it will be observed that the death-rate of the troops serving in them was higher than the average—1·63 per cent. of strength for the entire army during 1875. The commands stand thus in order of mortality, *viz.*, Presidency District, Peshawar District, Eastern Frontier District, North-Western Frontier, and Lahore Division.

Principal causes of sickness and mortality.

16. As to the causes of sickness, it may be briefly stated that malarious fevers and bowel complaints have caused a large proportion of the sickness in the Presidency and Eastern Frontier Districts, and in the Lahore and Peshawar commands; and the same diseases have also caused a great deal of the mortality. In addition to the prevalence of malarious fevers and bowel complaints, a condition has been frequently met with amongst the sepoys serving in the Presidency District which has been described by some medical officers as being true scurvy, while others consider it to be only malarious cachexia, or else an extreme deterioration of health, induced by malarious poisoning, conjoined with an insufficient or faulty dietary. The latter was the opinion of the Deputy Surgeon-General of the Presidency Circle, and of the Regimental Surgeon, with regard to some men of the 28th Regiment, Bengal Infantry, at Alipore, who were in this state. In all the other commands the rates of sickness and mortality were moderate, and do not call for any special remarks.

Sickness and mortality of each regiment.

17. Statements Nos. VIII and IX exhibit the sickness and mortality of each regiment in the native army. The rate of admissions per cent. of strength of the entire army was 128·75, but it will be seen in Statement No. VIII that no less than 47 regiments or batteries had an admission-rate in excess of this average, and that 41 of them were stationed in the commands alluded to in paragraph 14.

18. Looking at Statement No. IX it will be observed that the mortality of 43 regiments and batteries has exceeded 1·63 per cent. of strength, which was the death-rate for the entire army during the year 1875; and that 35 of them was stationed in the commands which I have already pointed out as being notably unhealthy for Hindoostani sepoys.

Digitized by Google

STATEMENT No. VIII.

Showing the Regiments of the Native Army in order of Sickness.

Corps.	Stations.	Serial No.	Admissions per cent. of strength.	Serial No.	Daily sick per cent. of strength.	Corps.	Stations.	Serial No.	Admissions per cent. of strength.	Serial No.	Daily sick per cent. of strength.
Hazara M. Battery	Kohat ...	1	285·08	18	5·62	24th N. I. ...	Jhansi ...	52	122·11	55	3·78
Viceroy's Body-guard	Dehra Dun ...	2	272·72	27	5·10	8th N. I. ...	Fyzabad ...	53	121·04	78	2·78
3rd P. L. F. Battery	D. I. Khan ...	3	264·77	2	7·02	9th N. I. ...	Monar ...	54	120·01	83	4·81
4th P. I. ...	Kohat ...	4	254·69	39	4·51	Malwa Bheel Corps	Sirdarpore ...	55	120·	69	3·26
12th N. I. ...	Peshawar ...	5	248·12	4	6·76	3rd B. C. ...	Nowgong ...	56	119·75	64	3·42
29th N. I. ...	Ditto ...	6	236·84	30	4·96	4th Goorkhas ...	Bakloh ...	57	119·25	50	4·10
10th N. I. ...	Barrackpore ...	7	230·94	1	13·33	20th N. I. ...	Peshawar ...	58	116·99	84	2·57
30th N. I. ...	Peshawar ...	8	225·37	6	6·28	Deolee Irr. Force	Deolee .	59	117·87	40	4·51
5th P. C. ...	Edwardesabad...	9	221·90	8	6·18	39th N. I., R. W.	Barrackpore ...	60	116·43	11	5·81
26th N. I. ...	Mecan Meer ...	10	220·81	23	5·15	6th N. I. ...	Lucknow ...	61	110·57	68	3·26
2nd P. L. F. Battery	Edwardesabad...	11	213·27	51	4·03	10th B. C. ...	Nowshera ...	62	108·19	61	3·53
3rd P. I. ...	Ditto ...	12	210·06	34	4·81	4th N. I., R. W....	Nya Doomka...	63	106 76	49	4·11
3rd S. I. ...	Kohat ...	13	209·97	54	3·89	37th N. I. ...	Fort William...	64	105·14	12	5·69
1st P. I. ...	D. G. Khan ...	14	204·40	31	4·94	19th B. C. ...	Lucknow ...	65	104·81	56	3·76
40th N. I. ...	Ferozepore ...	15	203·58	7	6·27	9th B. C. ...	Deolee ...	66	103·72	26	5·10
44th N. I. ...	Dibrugarh ...	16	199·55	25	5·12	13th N. I. ...	Benares ...	67	103·18	19	5·34
Peshawar M. Battery	Abbottabad ...	17	198·25	9	5·96	3rd Goorkhas ...	Almora ...	68	102·05	48	4·44
16th N. I. ...	Jalpaiguri ...	18	191·87	20	5·33	15th N. I. ...	Sialkot ...	69	101·57	53	3·90
7th N. I. ...	Jullundur ...	19	188·78	10	5·92	Sappers and Miners	Roorkee ...	70	101·38	83	2·65
39th N. I., L. W. ...	Alipore ...	20	182·61	5	6·53	5th Goorkhas ...	Abbottabad ...	71	98·31	44	4·42
1st N. I. ...	Gorakhpur ...	21	181·76	14	5·58	32nd N. I. ...	Umballa ...	72	98·16	79	2·70
12th B. C. ...	Peshawar ...	22	177·37	59	3·69	5th P. I. ...	Abbottabad ...	73	95·81	70	3·20
17th B. C. ...	Sialkot ...	23	177·12	3	6·89	17th N. I. ...	Morar ...	74	94·37	72	3·10
13th B. C. ...	Mooltan ...	24	173·07	17	5·40	4th N. I., L. W....	Bhagalpur ...	75	90·87	74	3·06
2nd P. C. ...	Kohat ...	25	168·67	22	5·24	23rd N. I. ...	Jhelum ...	76	89·64	77	2·87
3rd P. C. ...	D. I. Khan ...	26	167·33	58	3·73	Meywar Bheel Corps	Kherwarah ...	77	87 61	98	2·24
25th N. I. ...	Mecan Meer ...	27	165·99	60	3·62	15th B. C. ...	Umballa ...	78	86·86	73	3·07
8th B. C. ...	Peshawar ...	28	163·81	38	4·53	5th N. I. ...	Meerut ..	79	86·61	91	2·35
11th B C. ...	Mecan Meer ...	29	160·42	48	4·18	22nd N. I. ...	Jhelum ...	80	86·54	92	2·25
4th G. Coy. of Arty.	Kohat ...	30	160·23	32	4·82	Erinpoorah Irr. F.	Erinpoorah ...	81	85·92	81	2·66
2nd S. I. ...	D. I. Khan ...	31	159·70	24	5·14	45th N. I. ...	Moradabad and Shajahanpur.	82	82·53	87	2·51
1st P. C. ...	Rejanpur ...	32	159·69	52	3·99	18th B. C. ...	Allahabad ...	83	82·49	75	3·08
6th P. I. ...	Edwardesabad...	33	151·26	36	4·68	34th N. I. ...	Ditto ...	84	81·98	90	2·41
4th S. I. ...	D. G. Khan ...	34	149·94	57	3·75	19th N. I. ...	Talagang ...	85	81·44	98	1·73
Corps of Guides ...	Mardan ...	35	149·59	29	5·05	1st C. I. H. ...	Goonah ...	86	80·47	86	2·53
1st Goorkhas ...	Dharmsala ...	36	147·32	41	4·48	41st N. I. ...	Lucknow ...	87	78·92	45	4·32
28th N. I. ...	Alipore ...	37	146·89	18	5·38	14th B. C. ...	Rawal Pindi ...	88	76·86	88	2·44
42nd N. I. ...	Gauhati ...	38	143·67	42	4·46	2nd Goorkhas ...	Dehra Dún ...	89	76·80	66	3·27
4th P. C. ...	D. G. Khan ...	39	143·41	15	5·52	4th B. C. ...	Meerut ..	90	68·86	100	1·55
33rd N. I. ...	Delhi ...	40	142·99	47	4·22	7th B. C. ...	Sitapur ...	91	68·65	80	2·67
38th N. I. ...	Baxa ...	41	136·96	16	5·44	2nd B. C. ...	Segowlie ...	92	64·39	85	2·54
31st N. I. ...	Mooltan ...	42	136·85	63	3·43	2nd N. I. ...	Dinapore ...	93	64·38	76	2·90
43rd N. I. ...	Shillong ...	43	134·77	21	5·31	14th N. I. ...	Rawal Pindi ...	94	64·10	82	2·65
1st S. I. ...	Kohat ...	44	132·43	28	5·08	Bhopal Battalion	Sehore ...	95	61·02	101	1·38
6th B. C. ...	Morar ...	45	132·22	71	3·12	11th N. I. ...	Bareilly ...	96	55·03	96	1·90
2nd P. I. ...	D. I. Khan ...	46	131·50	46	4·29	1st B. C. ...	Cawnpore ...	97	51·71	95	1·92
3rd N. I. ...	Cachar ...	47	129·05	67	3·26	36th N. I. ...	Agra ...	98	48·40	65	3·38
27th N. I. ...	Nowshera ...	48	127·97	62	3·52	21st N. I. ...	Rawal Pindi ...	99	45·88	97	1 81
5th B. C. ...	Jhelum ...	49	127·22	89	2·42	35th N. I. ...	Cawnpore ...	100	42·47	99	1·72
18th N. I. ...	Agra ...	50	124·79	37	4·60	2nd C. I. H. ...	Augur ...	101	40·94	94	1·93
Mhairwarra Battn. ...	Ajmere ...	51	123·46	85	4·79	16th B. C. ...	Bareilly ...	102	23·69	102	1·07

Digitized by Google

STATEMENT No. IX.

Showing the Regiments of the Native Army in order of Mortality.

Serial No		Corps.	Station.	Deaths per cent. of strength.	Serial No.		Corps.	Stations.	Deaths per cent. of strength.
1*	2†	10th N. I. ...	Barrackpore ...	6·44	52*	48†	3rd P. C. ...	Dera Ismail Khan ...	1·22
2	1	1st P. I. ...	Dera Ghazi Khan ...	5·24	53	85	2nd C. I. Horse ...	Augur ...	1·21
3	3	12th N. I. ...	Peshawar ...	5·14	54	64	Hazara M. Batty. ...	Kohat ...	1·20
4	4	1st Goorkhas ...	Dharmsala ...	4·87	55	49	21st N. I. ...	Rawal Pindi ...	1·14
5	19	4th Gn. Co. of Arty.	Kohat ...	3·29	56	46	Erinpoorah Irr. F. ...	Erinpoorah ...	1·14
6	6	26th N. I. ...	Meean Meer ...	3·29	57	65	4th B. C. ...	Meerut ...	1·10
7	5	3rd S. I. ...	Kohat ...	3·27	58	53	11th B. C. ...	Meean Meer ...	1·08
8	12	1st S. I. ...	Ditto ...	3·26	59	52	6th N. I. ...	Lucknow ...	1·05
9	9	39th N. I., R. W. ...	Barrackpore ...	3·20	60	54	19th N. I. ...	Talagang ...	1·01
10	24	28th N. I. ...	Allipore ...	3·18	61	47	Meywar B. Corps ...	Kherwarah ...	·99
11	7	17th N. I. ...	Morar ...	3·05	62	75	32nd N. I. ...	Umballa ...	·98
12	8	2nd Goorkhas ...	Dehra Dún ...	2·96	63	84	Sappers and Miners.	Roorkee ...	·96
13	45	44th N. I. ...	Dibrugarh ...	2·95	64	67	4th P. I. ...	Kohat ...	·94
14	10	2nd S. I. ...	Dera Ismail Khan ...	2·84	65	89	1st B. C. ...	Cawnpore ...	·88
15	42	3rd P. L. F. Battery	Ditto ...	2·82	66	62	8th B. C. ...	Peshawar ...	·88
16	18	20th N. I. ...	Peshawar ...	2·73	67	58	10th B. C. ...	Nowshera ...	·88
17	14	4th S. I. ...	Dera Ghazi Khan ...	2·70	68	59	5th B. C. ...	Jhelum ...	·87
18	37	16th N. I. ...	Jalpaiguri ...	2·61	69	55	14th B. C. ...	Rawal Pindi ...	·87
19	20	42nd N. I. ...	Gauhati ...	2·57	70	61	19th B. C. ...	Lucknow ...	·87
20	53	3rd N. I. ...	Cachar ...	2·56	71	97	6th B. C. ...	Morar ...	·87
21	31	3rd P. I. ...	Edwardesabad ...	2·56	72	74	24th N. I. ...	Jhansi ...	·86
22	11	2nd P. I. ...	Dera Ismail Khan ...	2·46	73	87	41st N. I. ...	Lucknow ...	·86
23	16	30th N. I. ...	Peshawar ...	2·40	74	79	23rd N. I. ...	Jhelum ...	·86
24	30	12th B. C. ...	Ditto ...	2·40	75	78	9th N. I. ...	Morar ...	·85
25	57	5th Goorkhas ...	Abbottabad ...	2·14	76	81	8th N. I. ...	Fyzabad ...	·85
26	21	5th N. I. ...	Meerut ...	2·	77	77	35th N. I. ...	Cawnpore ...	·84
27	28	18th N. I. ...	Agra ...	1·99	78	71	1st P. C. ...	Rajanpur ...	·83
28	15	4th P. C. ...	Dera Ghazi Khan ...	1·98	79	83	4th N. I., R. W. ...	Nya Doomka ...	·76
29	27	31st N. I. ...	Mooltan ...	1·97	80	69	33rd N. I. ...	Delhi ...	·71
30	99	Viceroy's Body-guard	Dehra Dún ...	1·94	81	72	40th N. I. ...	Ferozepore ...	·71
31	17	Bhopal Battalion ...	Sehore ...	1·92	82	66	Malwa Bheel Corps.	Sirdarpore ...	·67
32	32	37th N. I. ...	Fort William ...	1·89	83	80	34th N. I. ...	Allahabad ...	·65
33	44	2nd P. L. F. Battery	Edwardesabad ...	1·88	84	70	Corps of Guides ...	Mardan ...	·63
34	13	6th P. I. ...	Ditto ...	1·87	85	66	14th N. I. ...	Rawal Pindi ...	·58
35	56	2nd P. C. ...	Kohat ...	1·86	86	82	Deolee Irr. Force ...	Deolee ...	·57
36	26	27th N. I. ...	Nowshera ...	1·85	87	76	Mhairwara Bn. ...	Ajmere ...	·56
37	40	5th P. C. ...	Edwardesabad ...	1·85	88	88	15th N. I. ...	Sialkot ...	·56
38	22	9th B. C. ...	Deolee ...	1·79	89	93	22nd N. I. ...	Jhelum ...	·43
39	41	7th N. I. ...	Jullundar ...	1·70	90	86	45th N. I. ...	Moradabad and Shahjahanpore.	·42
40	39	25th N. I. ...	Meean Meer ...	1·70	91	95	1st N. I. ...	Gorakhpur ...	·42
41	29	4th Goorkhas ...	Bahloh ...	1·69	92	78	3rd Goorkhas ...	Almora ...	·41
42	25	5th P. I. ...	Abbottabad ...	1·65	93	94	2nd N. I. ...	Dinapore ...	·28
43	43	38th N. I. ...	Baza ...	1·64	94	96	2nd B. C. ...	Segowlie ...	·22
44	36	43rd N. I. ...	Shillong ...	1·57	95	91	18th B. C. ...	Allahabad ...	·23
45	51	13th N. I. ...	Benares ...	1·56	96	90	3rd B. C. ...	Nowgong ...	·23
46	34	39th N. I., L. W. ...	Allipore ...	1·44	97	100	15th B. C. ...	Umballa ...	·21
47	33	29th N. I. ...	Peshawar ...	1·42	98	98	1st C. I. Horse ...	Goonah ...	·20
48	35	13th B. C. ...	Mooltan ...	1·31	99	92	4th N. I., L. W. ...	Bhagalpur ...	·20
49	50	16th B. C. ...	Bareilly ...	1·31	100	60	7th B. C. ...	Sitapur ...	·13
50	38	36th N. I. ...	Agra ...	1·30	101	101	17th B. C. ...	Sialkot ...	...
51	68	11th N. I. ...	Bareilly ...	1·29	102	102	Peshawar M. Batty.	Abbottabad ...	...

* This serial number represents the order of the rates of total deaths to "total" strength.
† This serial number represents the order of the rates of deaths occurring with the regiments to "present" strength.

Digitized by Google

19. Having concluded a brief review of the effect which climate and locality of stations exerted on the sickness and mortality of the native army, I shall now consider how far these two factors (climate and locality) were influenced by other and most important sanitary conditions, such as ventilation of buildings, over-crowding, drainage, water-supply, diet, clothing, &c.

20. That the conditions just enumerated exert an all-important influence, whether for good or evil, on the health of every community, has for some years past been an acknowledged fact; and I feel great pleasure in being able to report to Government, that the regimental medical officers of Her Majesty's Indian Army are not only particularly well informed on all such sanitary details, but that the attention they have individually bestowed on every question relating to the health of the men under their charge, and the cordial co-operation accorded by commanding officers of regiments, to their generally sound and practical recommendations, have together, in no small degree, contributed to exert a most beneficial influence on the health of the sepoys.

21. A general knowledge of the laws of health is the outcome of observation and good common sense, rather than of any very profound medical or chemical education; and it is no small matter that every man in a regiment, from the commanding officer downwards, has the opportunity for becoming more or less conversant with the more ordinary, though none the less important, subjects of hygiene, from having a medical officer associated with them, who, himself well acquainted with the rules for preserving health, is able, both by example and teaching, to impress those around him with their importance.

Benefits resulting from camp life and marching.

22. Every one of Indian experience is aware of the benefit which accrues to health from marching and camp life in the North-Western Provinces, Oudh, and the Punjab during the cold weather; and the opinions recorded in the several sanitary reports, as to the good effects which camp life exerted on the health of the men (some of whom were much debilitated as a result of duty in unhealthy stations) fully corroborate this belief.

Medical officers agree as to the good effects of camp life.

23. All the medical officers agree that the marches in ordinary course of relief were attended by good results, while some (whose regiments had been previously very unhealthy) bear the most unqualified testimony to the decided improvement which the march and residence afterwards at the camp of exercise effected in the health of the men; thus, of the 4th Regiment, Bengal Cavalry, we are told that the health of the men improved, and this though they were sometimes as many as eight and nine hours in the saddle. The medical officer of the 28th Regiment, Bengal Infantry, writes that when the regiment commenced the march from Cawnpore to Delhi it was very weakly, and at one time there were 70 men on the convalescent list; but the march and the exercise at the camp had a wonderful and most gratifying result on the health of the men. The sowars of the 11th Bengal Cavalry had suffered a good deal from intermittent fever while at Meean Meer, but they improved in health and strength during the six weeks they were encamped at Delhi.

Relief and service in 1875.

24. The following regiments were moved in course of relief, or were at the camp of exercise at Delhi, during 1875, *viz.*, 12 regiments of Bengal Cavalry, 4 companies of Sappers and Miners, and 18 regiments of Bengal Infantry, in course of ordinary relief; and 8 regiments of Bengal Cavalry, the head-quarters and 6 companies of the Sappers and Miners, and 15 regiments of Bengal Infantry were at the camp of exercise at Delhi. The remarks in the preceding paragraph tend to prove the beneficial effect which marching and camp life exerted on the health of the men so employed, and is amply confirmatory of former experience on this point.

Topography of stations.

25. I have, with few exceptions, omitted the topographical descriptions of stations from this report, for the simple reason that they have been mostly supplied in previous years, and therefore valuable space would be taken up by a useless repetition; however, those which have been submitted appear to be carefully prepared, and evince an anxiety on the part of medical officers to become acquainted not only with the peculiarities of the stations in which they were serving, but also with those of the district generally.

Meteorology.

26. Meteorological observations I have also in a great measure omitted, as regimental hospitals are not supplied with instruments with which observations of any practical value can be made. At the same time, however, as I

Digitized by Google

believe there is a very intimate connexion between certain meteorological phenomena and the outbreak of cholera in an epidemic form, as well as of malarious fevers, I am glad to see all the large military cantonments being supplied with a complete set of instruments, with which correct and valuable observations are made by a properly qualified observer.

The widening and deepening of the Aboo Nullah at Meerut.

27. Notwithstanding the widening and deepening of the Aboo Nullah at Meerut, the subsoil water of that station is said to have risen steadily during the past year. The influence, if any, which the rise of the subsoil water may have exerted on the increase or decline of malarious fevers, is not very convincingly proved, nor has it been incontrovertibly shown that those diseases, which now-a-days are generally attributed to a damp subsoil, have become strikingly more prevalent.

Cultivation and planting of trees.

28. The cultivation and planting of trees in cantonments and regimental lines seem to be very properly increasing in favor. It is now understood that trees (planted with certain precautions), instead of proving causes of sickness, will on the contrary act most beneficially by preserving the purity and increasing the moisture of the atmosphere, as well as by protecting us from extremes of temperature, likewise affording a grateful shade by their foliage at those seasons when shade is most required and most highly appreciated.

Barracks and huts.

29. Very little requires to be said regarding the huts or barracks in which the sepoys were located. The barracks are generally reported on as having been well ventilated and not overcrowded, and they will for many reasons most probably prove to be the buildings best suited for the requirements of the unmarried soldiers of the native army. During the past year, eight new barracks were built in the native infantry lines at Bareilly, and on a plan uniform with those previously existing. Each man in these barracks has now 50 square feet of superficial room, and 480 cubic feet of breathing space. At Dehra, also, twenty new barracks (each one for two families) were completed for the married men of the 2nd Goorkhas; and it is reported that they are well raised, and that in them the ventilation, breathing space, and superficial room are all that can be desired.

Ventilation of huts considered defective.

30. A good many medical officers consider the ventilation of the regimental huts to have been defective; but taking their construction into account, I am not prepared to admit that it has been so in all stations. That the huts are small, low, badly lighted, and, according to our ideas, afford but indifferent accommodation for their inmates, cannot be doubted, but from the fact of their being roofed (in some stations) with a single layer of tiles, through the interstices of which there must always be a free circulation of air; and besides, being either without doors or else provided with very badly fitting ones, it does not appear probable that there has been a deficiency of ventilation in them, nor do the reports bring forward any evidence sufficiently conclusive, from which the opinion can be formed that sickness has been caused through defective ventilation. I find that cooking was in some cases carried on inside the huts or barracks, and that the floors of the huts of a regiment serving in Peshawar were dug out below the level of the surrounding ground, in order, it is said, to allow of the men standing upright in them. It may be almost unnecessary to remark that such proceedings are objectionable.

Drainage.

31. I have long been of opinion that the drainage (surface and subsoil) of many military cantonments is defective, and that it has been one, if not the principal, of the causes on which outbreaks of cholera and of malarious fever were dependent. It would take up too much valuable space, and would extend this report much beyond its proper limits, if I attempted to explain the reasons from which I have arrived at the above conclusions; but to settle the question definitely, to what extent defective surface and subsoil drainage may be considered as the causes of cholera and of malarious fevers, I should like to see any one station of known unhealthiness *thoroughly* drained; the result might be worth the outlay. That the drainage of a good number of regimental lines was not efficient, there is evidence in the sanitary reports; thus, in the lines of the 10th Regiment, Bengal Infantry, at Barrackpore, it is reported that, at certain seasons, the drains serve as inlets for the river water and that from tanks They thus become reservoirs for the surface filth of the station, and give off most offensive odours when drying up. Of the Sappers

Digitized by Google

and Miners' lines at Roorkee, it is stated that there is a great deal of solar evaporation when silt or badly constructed culverts choke the out-fall. Whether the heavy rain which occurred on the 10th of May, and the after evaporation under a powerful sun, may have tended to cause the cholera which broke out on the 14th of the same month, and continued for 10 days, is a point worthy of consideration, though the medical officer considers there was no connexion between the disease and those electrical storms. At Gauhati, the lines are situated in the centre of a low swampy tract of ground, from which there is no natural drainage, and the artifical substitute for it is described as being as imperfect as can well be imagined. The subsoil water throughout the station is at no greater depth than one or two feet from the surface. The medical officer of the 25th Regiment, Bengal Infantry, at Meean Meer, considers that the sickness in the regiment was caused by the heavy rainfall of October, November, and early part of December, conjoined with defective drainage. Wet encamping grounds along the line of march of the 4th Goorkhas to the Delhi camp were, along with the effects of climate, considered to have been the cause of a good deal of sickness in the regiment. The fever cases which occurred in the 5th Regiment, Bengal Light Infantry, at Meerut, were considered to have been caused by the swampy condition of some ground close by the lines after the rains. The lines of the 17th Native Infantry at Morar, situated between the confluence of the Morar and Biswas rivers, are considered to be unhealthy.

Conservancy.

32. All the reports tend to show that the conservancy of cantonments and regimental lines was carefully attend to; this is what might be expected, as, independently of the interest which commanding officers take in the neat appearance and general cleanliness of their lines, all matters that require removal by the conservancy establishment generally attract notice. The

Horse litter.

horse litter in cavalry regiments can, as a rule, be disposed of to zemindars for manure; but where this cannot be done, it should, as is the practice in some stations, be burned.

Nullahs.

Nullahs in or near cantonments generally become the receptacles for filth of all kinds; their sides are overgrown with jungle, and except in very dry weather, or in very dry climates, they generally contain a greater or smaller quantity of stagnant and very filthy water; these nullahs on this account require constant supervision, otherwise they may, in all probability, become causes of sickness.

Latrines.

33. The conservancy of latrines appears to have been very carefully attended to, but still a great deal remains to be done in this direction. It appears from the reports that in many of the stations in the North-West and North-East Frontiers, in Central India, and perhaps here and there in stations

Primitive system objectionable.

occupied by the line regiments, the men follow the primitive system of visiting the adjacent jungle or cultivation for necessary purposes; and though restrictions may have been imposed on them as to the distance they should go to, and the locality they should frequent, yet the following extracts will tend to prove that this primitive system, which still has many supporters, is, to say the least of it, a most objectionable one, if it may not be also prejudicial.

3rd Regiment, Punjab Infantry.

The medical officer of the 3rd Punjab Infantry, stationed at Edwardesabad, reports that the men have to resort to the cultivated fields which come to within 50 yards of the fort; these emit a constant stench, generally more perceptible in the evening, and it is considered that the station cannot become even tolerably healthy "so long as it continues to lie in an atmosphere of fœcal miasm."

9th Regiment, Bengal Cavalry, at Deolee.

Surgeon-Major R. Mantell, when commenting on the increase of sickness in the 9th Regiment, Bengal Cavalry, since its arrival in Deolee from Rawal Pindi, remarks that the only way he can account for it "is by the insanitary condition of the station and its surroundings; there are no latrines, and the conservancy arrangements are very defective." The immediate neighbourhood of cantonments is often offensive in the extreme, and as the system (that natives should clear the cantonment boundary for necessary purposes) has been in practice for the last 18 years, the ground has become polluted, "and it is hardly a new idea to imagine that this condition of the soil, under climatic influences, produces a contamination of the air, which may, and surely does, give rise to

Digitized by Google

such effects upon all constitutions under its influence, as to render them more prone to disease and less amenable to treatment."

Difficulty in getting sepoys to use latrines is gradually being overcome.

The difficulty which, on the first introduction of the trench system, was experienced in getting the sepoys, who are very conservative of old customs, to resort to the latrines, appears to be gradually declining; but still these arrangements are not quite in accordance with native ideas; thus the latrines may be at an inconvenient distance from the lines, or they may not afford sufficient privacy, and segregation according to caste, while in wet weather the ground inside of them is, without doubt, both disgusting and offensive.

The "trench system."

"Dry-earth" system.

It is nevertheless probable that the "trench system," with certain improvements in the construction of the screens, and with a sufficient staff of sweepers in attendance, is perhaps the most economical and suitable for the requirements of a large body of men; while permanent latrines, on the "dry-earth" system, with a plentiful supply of the dry deodorizing material, under constant and careful supervision, in order to ensure the immediate removal of the excreta and the cleansing of the floors in case of defilement, have also been found to answer very well for hospital use. At all events the effective working of either system can only be ensured by keeping up a sufficient number of sweepers under due supervision.

Disposal of the sewage of Fort William.

The disposal of the sewage of Fort William, regarding which there has been a great difference of opinion, is likely to be finally and satisfactorily arranged for by connecting the drains with the municipal sewers. If this scheme is carried out, the pollution of the river, and the deposit of sewage mud along its foreshore, both above and below the point of discharge, will be prevented; but it will remain to be seen whether the diversion of the Fort sewage from the river will lessen the number of cholera cases amongst the shipping population. My conviction is that it will be an unimportant factor.

Latrine of the 4th B. C.

The latrine used by the men of the 4th Bengal Cavalry, at Meerut, was divided into sections for the different castes, and by this means, it is said that its unpopularity as a regimental institution was lessened. The trench latrine system has been introduced for the first time in the station of Dibrugarh, and promises to be a great sanitary success.

Water-supply

34. The water-supply in general use by the native army may be considered to have been of fairly good quality and abundant; and, with few exceptions, there is no evidence to prove that sickness resulted from its use. The principle seems to be now fairly established that the best water should be preserved for drinking purposes; that all chances of its defilement from outside sources should be avoided; and that, in any doubtful cases of its purity, it should be treated by filtration or boiling before being used for drinking purposes.

Regiments at Barrackpore supplied with pipe water.

During the latter half of the year, the regiments at Barrackpore were supplied with pipe water, and this was a great sanitary improvement, as the tank water which had been previously consumed was considered to be of very doubtful purity. In the 28th Regiment, Punjab Native Infantry, at Alipore, and the 39th Regiment, Native Infantry, at Barrackpore, the medical officers considered that diarrhœa and dysentery were caused by the use of tank water, and it would seem there has been a marked diminution in the number of these cases since the use of pipe water was commenced.

Bowel complaints supposed to have been caused by the use of tank water.

Bad water supply at Peshawar.

At Peshawar, the water in use by some of the regiments was considered to be very impure; thus it is reported that the water consumed by the men of the 30th Regiment, Native Infantry, was taken from the Bara river, which is believed to contain a great quantity of organic impurities, both animal and vegetable.

Diet.

35. The various articles of the sepoys' diet were, as a rule, plentiful, cheap, and of good quality, and were closely supervised by the regimental authorities.

Under-feeding.

There is evidence that cases of under-feeding occasionally came under observation; thus, in the 10th Regiment, Native Infantry, stationed at Barrackpore, it is reported that under-feeding, or at all events, improper feeding, might at one time be said to have been almost universally prevalent in the regiment. In the 38th Regiment, Native Infantry, it is stated that many of the men are of the "Bhagat" class,—that is to say, men who, by a religious vow, abstain from taking meat and other necessary articles of diet, and when such men came to hospital they rapidly succumbed to disease.

Digitized by Google

Under-feeding, bad results of.

Under-feeding is always, sooner or later, followed by a steady deterioration of the health of those men who, for the sake of saving a few rupees monthly, follow the practice; but in unhealthy climates (such as is the relaxing and malarious one of Lower Bengal for natives from the upper provinces) under-feeding means something more, and aids the climate in rapidly bringing on a condition which some medical officers consider to be true scurvy, while others consider it to be merely a state of malarious cachexia. There is no doubt, however, that this deterioration in health, the result of the combined effect of unfavorable climatic conditions and the use of insufficient or improper food, renders the men quite unfit for active service of any kind, and for its cure, change of air and proper dietary are essential. In less severe cases, a complete exemption from duty with a generous diet, of which animal food and a spirit ration should form a part, may suffice to restore health. Vegetables were generally readily procurable in all stations, though occasionally they were expensive and thus beyond the sepoys' means.

Troop-messing in the 7th Bengal Cavalry.

A system of troop-messing has been introduced into the 7th Regiment, Bengal Cavalry, and is reported to have worked well. The men of all the troops, except the 4th, which is composed of high-class Hindoos, eat in a body, and the advantages claimed for this system are a saving of labor and a saving of expense, as there is no waste; it is also a check against under-feeding, as each member of the mess has to pay an equal share of the expenses.

Although, on account of caste prejudices, it may be a difficult, or perhaps an impossible, matter to interfere in any appreciable way with the dieting of the sepoy, still the subject is one of most pressing importance, when it is considered how great is the influence which a sufficiency of good food exerts on his proper effectiveness. On these grounds it might be worthy of consideration whether stringent and definite orders, issued regimentally, might not be enforced, which would compel the native soldier to consume a full ration daily. It appears from the reports that commanding and medical officers have done all in their power to secure the issue of supplies of the best quality, and to prevent under-feeding in their regiments.

Uniform.

36. All the reports tend to prove that the uniform of the native army was considered to have been well suited for the climate and for the duties the men had to perform; but it is the opinion of medical officers that the recruits, and occasionally the sepoys, have not got a proper supply of suitable undress clothing, the result being that chest and bowel diseases were more prevalent among such men. The following extracts prove the importance of bestowing attention on this subject, *viz.*, the medical officer of the 35th Regiment, Native Infantry, considers that the good health of the men under his charge was in a great measure attributable to the care bestowed on their clothing. It is stated that the men of the 2nd Regiment, Native Infantry, were not provided with a sufficient amount of bedding, and that from this cause, chiefly, several cases of rheumatism occurred during the march from Dinapore. The men of the 29th Regiment, Native Infantry, at Peshawar, were supplied with "posteens," and it was considered with the effect of lessening the general sickness and the number of chest diseases. A "posteen" was issued to each recruit of the 27th Regiment, Native Infantry, and it is said there was a sufficiency of these garments in the quarter-master's store with which to supply each man when mounting guard at night.

Cases of pneumonia might possibly be lessened by a sufficiency of warm undress clothing.

37. It is well known how prevalent and how fatal pneumonia has been in regiments at stations in Northern India, and at those along the North-Western Frontier. Medical officers do not appear to be quite agreed as to the etiology of this disease, nor have I any intention of discussing it in this report; but, considering the seasons, and the meteorological conditions existing when these attacks are most prevalent, I consider that if greater attention was paid to the undress clothing of the men, the result would be a diminution of such cases, and of the mortality resulting from them.

Exemption of the Guide Corps from pneumonia.

The medical officer of the Guide Corps, when remarking on the freedom of the regiment from pneumonia during the past year, states that he attributes it to the capital clothing and the care that was taken to ensure the men when off duty being warmly clad; and his experience, gained during some years' service on the North-Western Frontier, leads him to look on neglect, in respect of warm undress clothing, as the principal, if not the only, cause of pneumonia.

Digitized by Google

I consider the principle is all but universally applicable. Insufficiency of the diet and scanty supply of warm under-clothing are the chief agents in the production of the bulk of the diseases from which sepoys suffer.

I have written somewhat at length on this subject, because having due regard to every matter within my province, which will increase the efficiency of the native army and prevent sickness amongst its members, I have felt it to be my duty to bring prominently to notice the fact of the sepoys being—at all events, in many instances—unprovided with a sufficiency of warm undress clothing.

Necessity for attention to the undress clothing of the sepoys.

38. Another very important question in connexion with the native army, and as yet an undecided one, is that which relates to the best kind of boot or shoe to be worn on duty.

Boots and shoes.

A great amount of service is annually lost to the State owing to the number of men in hospital for "blisters of the feet." I will give, therefore, some extracts on the subject from the sanitary reports. In the 35th Regiment, Native Infantry, it is reported that the men had shoes of a new pattern, *viz.*, low at the heels and sides, and fastened in front by a brass buckle. The men considered this kind of shoe to be an improvement, and the admissions into hospital on account of sore feet were less than in former years.

ADMISSIONS INTO HOSPITAL FOR BLISTERS OF THE FEET.

Year.	Admissions.
1871	2,429
1872	2,167
1873	2,194
1874	1,148
1875	2,542

The medical officer of the 2nd Regiment, Native Infantry, advocates the issue of a few pairs of stout socks to each sepoy. The men of the 31st Regiment, Native Infantry, on the line of march from Mooltan to Delhi, were allowed to wear native shoes, and with the result, it is stated, of reducing the number of blistered feet. In the 45th Regiment, Native Infantry, a black leather shoe was worn instead of the ammunition boot, and, it is reported, answered very well. The medical officer of the 5th Goorkhas reports that, so far as he could ascertain from the returns, the adoption of native shoes in place of ammunition boots had not the desired effect of diminishing the cases of sore feet. The experience of the medical officer of the 42nd Regiment, Native Infantry, is that little can be said against the ammunition boot when worn with socks during the Duffla Expedition; it is stated that a service boot, of what was called the "stable pattern," was served out to the men. The peculiarity in this boot was, that it was lower at the ankles, and, as the men wore bandages instead of gaiters, galled feet or ankles were almost unknown. The foregoing extracts represent the opinions of a few medical officers only, but a great many others have paid attention to the subject.

It appears to be generally conceded that *a well-made and well-fitting* ammunition boot, worn with *woollen socks of a good description*, would answer the desired purpose of preventing blisters of the feet, or at all events, would reduce such cases to a minimum; but, in addition, *it is absolutely necessary that the boots should be either greased or oiled, in order to keep the leather soft and pliable*. Considering how much the efficiency of the soldier depends on the state of his feet, it would doubtless be a great matter to determine definitely what are the best and most serviceable boots or shoes for the native soldier; whether they should be worn with socks, and if so, what kind of socks should be brought into use. Meanwhile, it is highly probable that the use of better leather, and an increase in the number of "sizes" when making the shoe up, would cancel a considerable part of the present inconvenience.

Boots with socks considered the best covering for the feet.

39. The duty of the regiments stationed at Fort William, Barrackpore, and Peshawar has been heavy; and in the 30th Regiment, Native Infantry, at Peshawar, it was considered to be the principal cause of the severe forms of illness amongst the men. The medical officer of the 4th Goorkhas attributes some of his most serious cases to debility, caused by the constant duty to which the men of the detachment were exposed when on duty at Simla.

Duty.

40. It is unnecessary to make any allusion to the medical and sanitary history of the troops engaged in the Duffla Expedition, as an exhaustive and

Duffla Expedition.

Digitized by Google

interesting account of the expedition, written by Deputy Surgeon-General Tyrell Ross, was published as an appendix to last year's report; and the medical officers whose regiments were employed there have supplied all further necessary information in their sanitary reports.

Medical history of the 1st Goorkha Regiment on service in the Malay Peninsula.

41. This year I publish, as an appendix, a very capital report written by Surgeon C. F. Oldham, 1st Goorkha Regiment, which contains a complete, practical, and interesting account of the medical and sanitary history of the regiment while employed on service, from 26th November 1875 to 31st March 1876, in the Malay Peninsula.

Gymnasia.

42. The training the sepoys now undergo in station and regimental gymnasia seems, wherever reported on, to have been highly useful in setting them up, and in developing their muscles and general physique; and is, moreover, quite in keeping with the natural direction of the sepoys' inclinations.

Hospitals.

43. The hospitals may be considered to have generally afforded ample accommodation for the sick, and to have been liberally supplied with medicines and the surgical appliances necessary for their proper treatment. There was a deficiency in some places of such minor articles as chicks, door-mats, &c., matters which, taken separately, may be of trifling importance, yet, when considered collectively, tend to add to the comfort of the sick very materially. However, great improvements in the equipment of hospitals of native regiments are being gradually introduced. As the new hospital for the sick of the 2nd Goorkhas at Dehra was not likely to be completed for another year, a temporary one was erected under regimental arrangements, with the result of adding materially to the comfort of the sick and the convenience of the men in the regiment. It was considered necessary too, on sanitary grounds, that the old hospital, which was a long way from the new cantonments, and whose walls and floors must have been saturated with the impure exhalations of 40 years' occupancy, should be abandoned, since, by doing so, all communication with Dehra could, in case of any epidemic disease, be completely shut off. On the completion of the new hospital, this temporary one will be made over for the accommodation of the sick women and children of the regiment.

Bath-rooms in hospitals.

44. The patients, most probably on account of caste prejudices, do not seem to have generally made much use of the hospital bath-rooms; but it was of no small assistance to the medical officers to have had the means at hand for the immediate preparation of baths of the required temperature in the treatment of any cases requiring them.

Hospitals in Rawal Pindi Circle, and in North-Western Frontier stations.

45. The hospitals in the Rawal Pindi Circle are described as being very cold and draughty, and on this account to be but badly suited for the proper treatment of the sick during the cold season (particularly of those suffering from chest and bowel diseases), even though they are provided with doors, purdahs, and fires. I do not consider it necessary to dwell upon these statements, because I consider it impossible that any one building can ever, quite successfully, meet the requirements of seasons differing so widely from one another; and, moreover, it is proper, where no emergency exists, to press for improvement with moderation and judgment. In some hospitals, windows or glazed doors still remain a want, and in these, on occasions of cold wind or rain, when the doors are shut, the patients must, for the time being, remain in almost total darkness. Here and there also accommodation, according to the authorized scale, has not been provided for the medical subordinates and hospital establishment, but the representations made regarding them will no doubt be acted on.

Recruits.

46. In some regiments, the recruits were considered by the administrative medical officers who inspected them to have been judiciously selected, while in others (particularly in the Rawal Pindi Circle) a rather large proportion of them were reported to be either of inferior physique or too old.

Instruction of Duffadars in 16th Bengal Cavalry in some details of minor surgery.

47. Dr. Tuson has instructed some of the duffadars of his regiment, the 16th Bengal Cavalry, in the details of minor surgery; he considers that they are quite competent to detect and put up a fracture on an emergency, when the services of a medical officer or subordinate might not be available; they are also said to be acquainted with the various means for controlling hæmorrhage, and may, on field service, be turned to very good account.

Dr. Tuson reports that the duffadars were most willing to learn, and that in this undertaking he received the entire approval and co-operation of his

Digitized by Google

commanding officer. This idea has originated with the Surgeon-Major, and may perhaps commend itself to other medical officers who might thus usefully occupy a portion of their own leisure and reap solid advantages from the assistance, in actual operations in war, of the men to whom they had imparted the instruction.

48. The diseases which caused the sickness and mortality of the native army in 1875 are shown in Table II, at the end of this volume; and the prevalence of the most common and fatal diseases is exhibited in Statements Nos. X and XI, shown also in comparison with those of the preceding year. Diseases causing sickness and mortality.

STATEMENT No. X.

Diseases.	Admissions per cent. of total admissions.		Diseases.	Admissions per cent. of total admissions.	
	1875.	1874.		1875.	1874.
Fevers	49·21	53·31	Diarrhœa	2·78	2·60
Cholera	·19	·06	Colic	1·11	·99
Rheumatism	3·64	2·74	Spleen	·53	·72
Syphilis	1·74	1·83	Gonorrhœa	·61	·68
Phthisis	·16	·14	Abscess	1·88	1·77
Anæmia	·13	·19	Ulcers	2·37	2·53
Ophthalmia	2·34	1·98	Boils	2·66	2·63
Diseases of ear	·48	·52	Scabies	·55	·60
Bronchitis	2·56	1·80	Debility	1·59	1·25
Pneumonia	1·01	·77	Poisons	·08	·06
Pleurisy	·27	·29	Injuries	10·44	9·65
Dyspepsia	·89	·79	All other diseases	8·42	8·75
Dysentery	5·36	4·35			

STATEMENT No. XI.

Diseases.	1875.		1874.	
	Died per cent. of admissions.	Died per cent. of total deaths.	Died per cent. of admissions.	Died per cent. of total deaths.
Small-pox	20·59	1·04	28·68	2·43
Fevers	·46	23·00	·32	22·02
Cholera	43·94	8·61	69·05	5·41
Phthisis	26·72	4·60	28·56	5·59
Apoplexy	57·14	·59	100·00	·37
Bronchitis	1·02	2·67	1·10	4·46
Pneumonia	25·25	26·26	20·40	20·7
Pleurisy	5·82	1·63	3·86	1·49
Dysentery	1·03	5·64	1·24	7·09
Diarrhœa	1·67	4·75	1·54	5·22
Spleen diseases	3·82	3·41	1·23	1·49
Debility	2·54	4·15	2·04	3·36
Poisons	6·90	·59	12·77	1·12
Injuries	·14	1·48	·19	2·43
All other diseases	·45	11·57	·50	16·98

The admissions from the several diseases shown in Statement No. X have varied very little from those for 1874, and the only marked increase in the rates of admissions has been from dysentery, which increased by 1 per cent. From Statement No. XI it will be gathered that the death-rate, per cent. of admissions, was less in 1875 from small-pox, cholera, and dysentery, but that it was higher during the same period from fevers, pneumonia, pleurisy, spleen diseases, and debility.

49. During 1875, 132 cases of cholera are recorded as having occurred amongst the men present with their regiments. This number was considerably higher than had been observed in the two preceding years; but it will be seen in Statement No. X that it formed but a small unit in the percentage of admissions, and was only ·21 per cent. on the strength of the army. Cholera.

CHOLERA.

Years.	Cases.	Deaths.
1869	590	345
1870	48	28
1871	49	30
1872	349	208
1873	68	28
1874	42	29
1875	132	58

Digitized by Google

The mortality was at the rate of 43·93 per cent. of the cases which were treated in hospital. There were also 28 deaths from cholera amongst men who were absent on furlough, &c.

STATEMENT No. XII.

Corps.	Stations.	Admitted.	Died.	Remarks.
3rd Bengal Cavalry ...	Nowgong ...	4	1	
4th ditto ...	Meerut	2	2	
4th ditto (Det.) ...	Delhi	1	1	
6th ditto ...	Morar	1	...	
19th ditto ...	Lucknow	2	2	
1st Native Infantry ...	Gorakhpur	1	...	
2nd ditto ...	Dinapore	1	...	
3rd ditto ...	Cachar	3	1	
6th ditto ...	Lucknow	5	3	
10th ditto ...	Barrackpore	2	...	
11th ditto ...	Bareilly...	1	...	
13th ditto (Det.)...	Chunar	1	1	
16th ditto (R. W.)	Jalpaiguri	3	1	
16th ditto (L. W.)	Dacca	4	1	
17th ditto ...	Morar	8	4	
25th ditto (Det.)...	Umritsar	1	1	
33rd ditto ...	Delhi	1	1	
34th ditto ...	Allahabad	4	2	
35th ditto ...	Cawnpore	1	1	
37th ditto ...	Fort William	1	...	
38th ditto ...	Baxa	1	...	
39th ditto ...	Barrackpore	1	1	
41st ditto ...	Lucknow	2	...	
42nd ditto (Det.)...	Tezpur	1	1	
42nd ditto (Det.) ...	Naga Hills	1	1	
43rd ditto ...	Gauhati	8	3	
1st Goorkhas ...	Dharmsala and Chaitroo ...	49	18	
2nd ditto ...	Dehra Dun	5	3	
4th ditto ...	Bakloh	4	2	
1st Central India Horse ...	Goonah	1	...	
2nd ditto ...	Augur	1	...	
Bhopal Battalion (Det.) ...	Indore	9	6	
Deolee Irr. Force ...	Deolee	1	...	
2nd Punjab Infantry ...	Dera Ismail Khan	1	1	
6th Bengal Cavalry ...	Not known	...	1	Furlough.
6th ditto ...	Delhi	...	1	Ditto.
12th ditto ...	Delhi	...	1	Ditto.
12th ditto ...	Akrabad	...	1	Ditto.
3rd Native Infantry ...	Dacca	...	1	Ditto.
3rd ditto ...	Tipperah	...	1	Ditto.
11th ditto ...	Not known	...	1	Ditto.
42nd ditto ...	Dhubri	...	1	Ditto.
42nd ditto ...	River steamer	...	1	Ditto.
44th ditto ...	Gauhati and steamer ...	..	5	Ditto.
28th ditto ...	Sahibgunge	...	1	Out of hospital.
43rd ditto ...	Gauhati	...	1	Ditto.
1st Goorkhas ...	Dharmsala	...	1	Ditto.
2nd Central India Horse (Det.) ...	Near Indore	...	1	Ditto.
2nd ditto ...	Sarunpore	...	1	Ditto.
2nd Punjab Cavalry...	Bulandshahar	...	1	Furlough.
5th Goorkhas ...	Allyghur	...	8	A recruit *en route* to head-quarters.
	Total ...	132	86	

Cholera in the 1st Goorkhas.

It will be gathered from Statement No. XII, that 18 of the deaths from cholera occurred in the 1st Goorkha Regiment at Dharmsala and Chaitroo; the remaining deaths were principally—at Indore, 6; Lucknow, 5; Morar, 4; Dehra Dun, 3; with 8 cases amongst regiments stationed in Bengal and the North-Eastern Frontier. The remainder, single, dropping cases, were widely scattered.

Small-pox.

50. During 1875 only 34 cases of small-pox were treated, of which 7 proved fatal; this affords proof that the men of the native army are well protected by inoculation, vaccination, or by a previous attack of the disease. Medical officers seem to take an increasing interest in the subject of vaccination.

Chest diseases.

51. The prevalence of chest diseases in 1875 is shown in Statement No. XIII, in comparison with the four preceding years.

Digitized by Google

STATEMENT No. XIII.

YEAR.	Bronchitis and Bronchial catarrh.		Pneumonia.		Pleurisy.		Other diseases.		Total.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1871	1,668	66	624	149	233	13	366	7	2,891	235
1872	1,909	61	498	103	187	3	353	16	2,947	183
1873	1,792	52	536	87	238	13	307	9	2,873	161
1874	1,749	25	544	111	209	8	248	7	2,750	151
1875	1,769	18	701	177	189	11	263	5	2,922	211

Chest diseases, as remarked last year, were most prevalent and fatal in regiments serving in Upper India, and more especially in those stationed on the Punjab frontier. Medical officers do not seem to be quite agreed as to the etiology of the pneumonia which generally proves so fatal along the Punjab frontier, but it will be gathered from paragraphs 36 and 37 that cold, acting on men insufficiently clothed when off duty, is most probably the exciting cause of pneumonia and other chest affections which, with the exception of pleuritis, were in excess of the numbers recorded in 1874.

Syphilis.

52. In statement No. XIV is shown the rate per cent. of strength of cases of primary and secondary syphilis, and of gonorrhœa in the native army during 1875. Venereal diseases generally constitute but a small proportion of the cases admitted into hospital; and when prevalent in any regiment, it will generally be found that the cantonment is either not far distant from some large city or town, or by some other means affords the sepoys unusual facilities for promiscuous intercourse with females who cannot be reached by the provisions of the Contagious Diseases Act. I have given extracts from the inspection reports of Deputy Surgeons-General on the working of lock hospitals in their several circles of medical administration, and they tend to prove that the results, so far as the registered prostitutes are concerned, have been highly satisfactory. Much, however, still remains to be done to ensure the proper working of the Act in all military cantonments, as it appears to be the fact that there are a large number of women practising prostitution who (for reasons which hardly come within the scope of this report) cannot be brought under the wholesome surveillance which it provides by registration and by periodical inspections. This flaw appears to interfere most seriously with the benefits which would otherwise be derived from lock hospitals in Bengal.

STATEMENT No. XIV.

YEARS.	Cases per cent. of strength.			Total.
	Primary syphilis.	Secondary syphilis.	Gonorrhœa, &c.	
1871	1·43	·54	·98	2·95
1872	1·24	·51	·96	2·71
1873	1·25	·68	1·05	2·98
1874	1·77	·66	·48	2·91
1875	1·48	·71	1·07	3·26

Interesting cases.

53. I have been very glad to notice that some medical officers have recorded many interesting medical and surgical cases in their sanitary reports; and I regret that I am unable to reproduce them all at length in this volume. However, the pages of the *Indian Medical Gazette* are open for the record of all such cases of interest, and such a periodical is, perhaps, the more fitting place for bringing them conspicuously to notice.

Important surgical operations.

54. Few surgical cases of importance can be expected to be met with in time of peace and amongst a body of healthy men, but still I have noticed

Digitized by Google

with pleasure that, during 1875, such major operations as the following have been performed, *viz.*, ligature of the common carotid artery, amputations and lithotomy, thus proving that army medical officers are not neglectful of their profession, but gladly embrace every opportunity for keeping up their manual dexterity; and that, whenever the emergency may arise, the Government has at its disposal a body of officers who are not only well qualified in hygienic science, but are also fully competent as skilful physicians and expert surgeons to administer the most effectual aid to sick and wounded alike.

I have the honor to be,

SIR,

Your most obedient Servant,

J. FULLARTON BEATSON, M.D.,

Surgeon-General, Indian Medical Department.

Digitized by Google

INDEX.

[*The Regiments are placed as they stood in the Army List on the 1st of July 1875.*]

PRESIDENCY DISTRICT,

(Including the Stations of Fort William, Alipore, Dum-Dum, Barrackpore, Bhagalpur and Doranda.)

	Page.		Page.
37th (The Meerut) Regiment, Native Infantry ...	1	39th (Allyghur) Regiment, Native Infantry—Head-Quarters and Right Wing ...	10
28th (Punjab) Regiment, Native Infantry ...	2	4th Regiment, Native Infantry	13
39th (Allyghur) Regiment, Native Infantry (Left Wing)	5	4th Regiment, Native Infantry (Right Wing)	15
10th Regiment, Native Infantry	6	33rd Regiment, Madras Native Infantry ...	16
10th Regiment, Native Infantry—Detachment ...	9		

ALLAHABAD DIVISION,

(Including the Stations of Allahabad, Dinapore, Segowlie, Benares, Chunar and Cawnpore.)

18th Regiment, Bengal Cavalry	17	13th (The Shekhawatta) Regiment, Native Infantry	25
34th (Fatehgarh) Regiment, Native Infantry ...	18	1st Regiment, Bengal Cavalry	29
2nd Regiment, Native (Light) Infantry ...	21	35th (The Mynpoorie) Regiment, Native Infantry	31
2nd Regiment, Bengal Cavalry	23		

GWALIOR DISTRICT,

(Including the Stations of Morar and Jhansi.)

6th Regiment, Bengal Cavalry	34	17th (The Loyal Poorbeah) Regiment, Native Infantry	37
9th Regiment, Native Infantry	35	24th (Punjab) Regiment, Native Infantry ...	40

SAUGOR DISTRICT,

(Including the Stations of Jubbulpore, Saugor, Banda, Nagode and Nowgong.)

16th Regiment, Madras Native Infantry ...	43	11th Regiment, Madras Native Infantry ...	49
3rd Regiment, Madras Light Cavalry ...	44	3rd Regiment, Bengal Cavalry	52
3rd Regiment, Madras Light Cavalry—Detachment	46	3rd Regiment, Bengal Cavalry—Detachment...	53
5th Regiment, Madras Native Infantry ...	46	20th Regiment, Madras Native Infantry (Right Wing)	54
20th Regiment, Madras Native Infantry (Head-Quarters and Left Wing)	47		

RAJPOOTANA,

(Including the Stations of Deolee and Erinpoorah.)

9th Regiment, Bengal Cavalry	58	Erinpoorah Irregular Force	62
Deolee Irregular Force	60		

CENTRAL INDIA,

(Including the Stations of Goonah, Augur, Kherwarrah, Sirdarpore, Sehore and Ajmere.)

1st Regiment, Central India Horse ...	65	Malwa Bheel Corps	75
2nd Regiment, Central India Horse ...	69	Bhopal Battalion	78
Meywar Bheel Corps	72	Mhairwarra Battalion	80

OUDH DIVISION,

(Including the Stations of Lucknow, Sitapur, Fyzabad and Gorakhpur.)

19th Regiment, Bengal Cavalry (Lancers) ...	82	8th Regiment, Native Infantry	93
6th Regiment, Native Infantry	85	7th Regiment, Bengal Cavalry	94
41st (The Gwalior) Regiment, Native Infantry...	88	1st Regiment, Native Infantry	96

MEERUT DIVISION,

(Including the Stations of Meerut, Agra, Delhi, Dehra Dún and Roorkee.)

4th Regiment, Bengal Cavalry	98	33rd (The Allahabad) Regiment, Native Infantry	109
5th Regiment, Native Infantry	101	Viceroy's Body Guard	113
18th (The Alipore) Regiment, Native Infantry ...	105	2nd Goorkha (The Sirmoor Rifle) Regiment ...	114
36th (The Bareilly) Regiment, Native Infantry	107	Bengal Sappers and Miners	117

Digitized by Google

ROHILCUND DISTRICT,

(Including the Stations of Bareilly, Moradabad, Shahjehanpur and Almora.)

	Page.		Page
16th Regiment, Bengal Cavalry	121	45th (Rattray's Sikhs) Regiment, Native Infantry	127
11th Regiment, Native Infantry	123	3rd Goorkha (The Kumaon) Regiment ...	130

SIRHIND DIVISION,

(Including the Stations of Umballa and Jullundur.)

15th Regiment, Bengal Cavalry	132	7th Regiment, Native Infantry	137
32nd (Punjab) Regiment, Native Infantry ...	134		

LAHORE DIVISION,

(Including the Stations of Meean Meer, Forezepore, Mooltan, Dhurmsala and Baklok.)

11th Regiment, Bengal Cavalry (Lancers) ...	139	31st (Punjab) Regiment, Native Infantry ...	147
25th (Punjab) Regiment, Native Infantry ...	141	40th (The Shahjehanpur) Regiment, Native Infantry	150
26th (Punjab) Regiment, Native Infantry ...	142	1st Goorkha Regiment	152
13th Regiment, Bengal Cavalry (Lancers) ...	144	4th Goorkha Regiment	155

RAWAL PINDI DIVISION,

(Including the Stations of Rawal Pindi, Jhelum, Sialkot and Talagang.)

14th Regiment, Bengal Cavalry (Lancers) ...	157	23rd (Punjab) Regiment, Native Infantry ...	167
14th (The Ferozepore) Regiment, Native Infantry	159	17th Regiment, Bengal Cavalry	169
21st (Punjab) Regiment, Native Infantry ...	162	15th Regiment, Native Infantry	170
5th Regiment, Bengal Cavalry	164		
22nd (Punjab) Regiment, Native Infantry ...	165	19th (Punjab) Regiment, Native Infantry ...	172

PESHAWAR DISTRICT,

(Including the Stations of Peshawar, Nowshera and the Doaba Outposts.)

8th Regiment, Bengal Cavalry	175	29th (Punjab) Regiment, Native Infantry ...	184
12th Regiment, Bengal Cavalry	177	30th (Punjab) Regiment, Native Infantry ...	186
12th Regiment, Native Infantry	179	10th Regiment, Bengal Cavalry (Lancers) ...	189
20th (Punjab) Regiment, Native Infantry ...	181	27th (Punjab) Regiment, Native Infantry ...	191

PUNJAB FRONTIER FORCE,

(Including the Stations of Abbottabad, Mardan, Kohat, Edwardesabad, Dera Ismail Khan, Dera Ghazi Khan and Rajanpur.)

Peshawar Mountain Battery	194	5th Regiment Punjab Cavalry	213
5th Goorkha Regiment	196	3rd Regiment, Punjab Infantry	215
5th Regiment, Punjab Infantry	199	6th Regiment, Punjab Infantry	216
Corps of Guides	201	No. 3 Punjab Light Field Battery ...	218
Hazara Mountain Battery	204	3rd Regiment, Punjab Cavalry	219
No. 4 Garrison Company of Artillery ...	205	2nd Regiment, Sikh Infantry	220
2nd Regiment, Punjab Cavalry	206	2nd Regiment, Punjab Infantry	222
4th Regiment, Punjab Infantry	207	4th Regiment, Punjab Cavalry	225
1st Regiment, Sikh Infantry	209	1st Regiment, Punjab Infantry	227
3rd Regiment, Sikh Infantry	211	4th Regiment, Sikh Infantry	228
No. 2 Punjab Light Field Battery	212	1st Regiment, Punjab Cavalry	230

EASTERN FRONTIER DISTRICT,

(Including the Stations of Shillong, Gawhati, Dibrugark, Cachar, Jalpaiguri and Baxa.)

43rd Regiment, (Assam) Light Infantry ...	232	3rd Regiment, Native Infantry	242
42nd Regiment, (Assam) Light Infantry ...	236	16th (The Lucknow) Regiment, Native Infantry	245
44th Regiment, (Sylhet) Light Infantry ...	239	38th Regiment, Native Infantry	248

STATISTICAL TABLES.

Table No. I.—Statement showing Sickness, Mortality and Invaliding in the Native Army of Bengal for the year 1875 251

„ „ II.—General Statement of Sickness and Mortality of the Native Army of Bengal for the year 1875 259

„ „ III.—Statement showing the age of the Sepoys of the Native Army and the death-rate according to age 264

APPENDIX.

Medical History of the 1st Goorkha Light Infantry while employed on service in the Malay Peninsula, by Surgeon-Major C. F. Oldham 265

Digitized by Google

MEDICAL AND SANITARY REPORT

OF THE

NATIVE ARMY OF BENGAL

FOR THE YEAR

1875.

[The Regiments are placed as they stood in the Army List on the 1st July 1875.]

PRESIDENCY DISTRICT.

(INCLUDING THE STATIONS OF FORT WILLIAM, ALIPORE, DUM-DUM, BARRACKPORE, BHAGALPUR, AND DORANDA.)

		Bengal Troops.		Madras Troops.	
Average daily strength present during the year	...	Infantry	3118·2	Infantry	607
Average daily sick per cent. of average strength	...	„	6·69	„	1·51
Ratio of mortality per cent. of average strength	...	„	2·68	„	·33

37th (The Meerut) Regiment Native Infantry, Fort William.

Medical Officers.—Surgeon J. C. G. Carmichael held charge of the regiment from 1st January to 4th September, when he was relieved by Surgeon J. Armstrong, who remained with the regiment from 5th September to 11th November. Surgeon Carmichael again held charge of the regiment from 12th November to 8th December, and Surgeon G. A. Ranking, by whom the Sanitary Report has been submitted, was in charge from the 9th to the 31st of December. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	R. W. Bhagalpur, L. W. Dinapore, November 1869	82·1	·57	3·15
1871 ...	Ditto ditto ...	102·2	1·59	4·21
1872 ...	Fort William, November 1872.	118·8	3·43	3·69
1873 ...	Ditto ditto ...	154·9	2·04	4·84
1874 ...	Ditto ditto ...	110·7	1·47	5·18
	Average	113·74	1·82	4·21
1875 ...	Fort William ...	104·96	1·87	5·69

As described in the Report for 1873, the barracks are good and in thorough repair with the exception of the rampart barracks, the ventilation of which is insufficient, and the drainage good and effective. Barracks.

Appears to be satisfactory, except when the Hooghly is flooded. Drainage.

The hospital latrine answers admirably and deserves great attention as a model of hygiene under difficulties of no small degree. The system of the latrines in the Fort is radically bad and unscientific, and must be a most fruitful source of disease; the dry-earth system, if it were once introduced and fairly set on foot, would prove a sure means of safely disposing of the sewage. The urinals (if they can be called such) at the back of the rampart barracks call for the most unqualified condemnation, they are invariably filthy, as the urine is only about half discharged into the receptacles and lies about decomposing, and giving rise to most offensive and deleterious emanations. This appears to me a state of affairs easily remediable by the simple provision of covered places divided by partitions, so as to give the sepoy that privacy, to gain which, each man selects a different spot to pass urine. Latrines. Urinals.

Water-supply, &c.—The water is described as being supplied from the municipal pipes, and was of good quality and abundant. The regimental bazar was Water-supply, &c.

Digitized by Google

well provided with all the various articles of food requiried by the sepoy, and the medical officer states that the men appear to have been well fed. The duty, owing to the number of guards furnished by the regiment, is stated to have been heavy; the men had but 3·5 nights in bed on an average during the year.

Hospital. *Hospital.*—At Alipore, 1½ miles from the lines, in good repair; the ventilation is good if the hospital is not over-crowded, but it is far too small, only admitting 71 patients at the most extreme computation.

Sickness, mortality, and Invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	606·87
Absent	80·57
Total	687·44

Station.	Period		Strength.	Total Number of		Daily average number of sick.	Per cent of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head Quarters at Fort William	January 1875.	January 1876.	606·87	637	13	34·57	104·96	2·14	5·69

Number of deaths in hospital 9; out of hospital 4; total 13; per cent. of total strength	...	1·87
„ invalided ... ... 34; „ „ ...	...	4·94
„ sent on sick leave .. .. 13; „ „ ...	...	1·87
„ of days spent in hospital 12,618; per admission 19·81; per man of total strength	...	18·35
„ „ on sick leave 2,160; per man ... 166; „ „ ...	...	3·14
Total temporary loss of service per man of total strength	...	21·49

Sickness. *XVI. Sickness.*—From a table compiled by the medical officer and which it is unnecessary to reproduce, it appears that the principal sickness during the year was caused by intermittent fevers, bowel complaints, chest diseases, gonorrhœa, and primary syphilis—blistered feet gave but 15 admissions into hospital.

Deaths. Of the total deaths in hospital, there was but one from fever (complicated with pneumonia) and one from dysentery.

Inspection. The Deputy Surgeon General of the Presidency Circle inspected the regiment on the 12th January 1876, and the following information has been extracted from his Inspection Report:—

The regiment was in Fort William and occupied the right and left rampart barracks at St. George's gate, and the ground floor of the north and south European barracks; the ventilation of the bomb-proof barracks at St. George's gate is described as being deficient. Water-supply is of excellent quality, being from the municipal pipes, and abundant; the drainage of the Fort is described as being excellent.

Hospital. The hospital of the regiment is at Alipore, about 1½ miles distant from the Fort, and in it there is good accommodation for 35 men; but should the sick be in excess of this number, there are two wards available in the hospital of the regiment stationed at Alipore.

Medicines. There was an ample stock of medicines in store, and the instruments, as a rule, were in good order.

28th (Punjab) Regiment Native Infantry—Alipore.

Medical charge. Surgeon W. R. Murphy held the medical charge of the regiment from the 13th October till the end of the year:—

Year.		Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Ferozepore Feby. 1870	122 9	2·3	3
1871 ...	Ditto ditto ...	72·03	·85	2·09
1872 ...	Alipore Dec. 1872 ...	79·2	·71	2·41
1873 ...	Ditto ditto ...	193·2	1·02	4·64
1874 ...	Ditto ditto ...	170·8	1·73	5·96
...	Average	127·62	1·32	3·62
1875 ...	Alipore	146·73	3·20	5·35

I. Medical officers in charge during the year—

Surgeon G. Price from 1st January to 23rd July 1875; Surgeon-Major R. T. Lyons from 23rd July to 14th September 1875; Surgeon H. A. C. Gray from 14th September to 13th October 1875.

Location & movements. *II. Location and movements*—The regiment was stationed at Alipore up to the 4th November 1875. On that day it started for the camp of exercise at Delhi. It was conveyed by rail to Cawnpore, where it arrived on November 7th, and on the morning

Digitized by Google

of the 10th November started on the march to Delhi. The regiment arrived at Delhi on the 6th December, and was encamped at Sufter Jung's Tomb until the end of the year.

Lines, barracks, &c.—The position, disposition, site, surroundings, &c., of the lines at Alipore have been frequently and fully described in former reports. The buildings of the Alipore lines are all that could be wished. The site, however, is decidedly low and the station is very unhealthy towards the close of, and immediately after, the rains; the various camping grounds were very good. Lines, barracks, &c.

VI. Drainage.—The system of drainage has been fully described in former reports. It is, perhaps, as satisfactory as can be expected, taking into consideration the fact of the low-lying site of the lines. The condition of the large drain spoken of by Surgeon Price in last year's report has been greatly improved. Drainage.

VII. Conservancy and Latrines.—The system has been described in former reports. The latrines for the hospital are very clean and good, but those for the lines have been condemned over and over again. They are nearly half a mile distant from the lines, and were in a most filthy condition; the smell at times, especially when the wind blows towards the lines, being exceedingly offensive. How far the condition of this latrine is conducive to, or productive of, the bad dysentery so prevalent among the men at Alipore, is in my opinion a question well worthy of consideration; the difficulty in establishing a system by which this latrine may be kept in a proper condition appears to be a financial one. Conservancy and latrines.

VIII. Water-supply.—The water-supply at Alipore is now all that can be desired. The municipal water is daily supplied in carts. In quality and quantity it is excellent, if sufficient; since the men have been supplied with this water, the number of dysenteric cases has remarkably diminished. Near the lines are two large tanks for bathing and washing purposes. Water-supply

IX. Diet.—The dietary arrangements for the men throughout the year were excellent. The bazar was very good and frequently inspected. There is always a bazar committee of native officers. The sepoys are compelled to purchase from the regimental bunniahs, and, to ensure that they purchase sufficient food, there is a system of stoppages from each sepoy's pay in favour of the regimental bunniahs. As a rule, however, the men spend considerably in excess of this stoppage. Diet.

X. Clothing.—The men on duty in the hot weather wear *khakee* uniform; in the cold, red cloth. Both are very suitable to the season. Off duty in the cold season, thin "*mufti*" might with great advantage be of a warmer description. Clothing.

XI. Duty.—The duty at Alipore is excessively heavy, and has undoubtedly a very deleterious effect on the health of the men. This heavy duty is owing principally to the number of guards which have to be furnished. The number of nights in bed was 4·5. Duty.

XII. Exercise and amusements.—Owing to the heavy duties, the men seemed little inclined to indulge in their usual sports, wrestling, clubs, &c. Exercise and amusements.

XIII. Marches and service.—The regiment moved by train from Alipore, as above stated, to Cawnpore on November 4th, and arrived on November 7th; from November 10th to December 6th, it was on the march to Delhi. This march had a very good effect, indeed, in restoring the physical condition of the regiment, which had much deteriorated at Alipore. The regiment took part in the manœuvres at the camp of exercise, Delhi. Marches and service.

XIV. Hospital.—The particulars of the hospital at Alipore have been frequently given in former reports. The condition of the hospital is very satisfactory. Hospital.

XV.—Sickness, mortality and invaliding.—Strength of the Regiment— Sickness, mortality, and invaliding.

Present	...	...	...	...	607·9
Absent	...	...	...	...	81·92
			Total	...	689·82

Station.	Periods.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From.	To.		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head Quarters at Alipore ...	1st Jan. 1875	4th Nov. 1875	685·24	713	10	34·19	124·93	1·75	4·99
Ditto March ...	4th Nov. 1875	6th Dec. 1875	625·50	73	...	17·06	141·99	...	2·72
Ditto Camp, Delhi ...	6th Dec. 1875	31st Dec. 1875	543·38	53	...	9·54	114·84	...	1·93
Detachment Moradabad ...	16th Nov. 1875	Ditto	141·6	38	1	10·15	213·0	5·60	7·16
Ditto Shajehanpore ...	Ditto	Ditto	28·08	15	...	4·63	424·9	...	16·56
	...	...	607·9	892	11	32·57	146·73	1·80	5·35

Number of deaths in hospital 11; out of hospital 11; total 22; per cent. of total strength			...	3·20
„ invalided	18;	„ „	...	2·61
„ sent on sick leave	23;	„ „	...	3·33
„ of days spent in hospital, 11,791; per admission 13·22; per man of total strength			...	17·09
„ „ on sick leave 4,659; per man ... 202·56;		„ „	...	6·75
Total temporary loss of service per man of total strength			...	23·84

Digitized by Google

Principal causes of sickness.

XVI. Principal causes of sickness.—The principal causes of sickness during the year were malarious fevers, dysentery, diarrhœa, and their sequelæ. Some of the cases of malarious remittent fever and of dysentery were of a very severe type, and the cases of intermittent fever were sharp, obstinate and intractable. It is especially towards the close of, and immediately after, the rains that these diseases are most prevalent and severe.

Principal causes of mortality.

XVII. Principal causes of mortality.—The greatest number of deaths are entered under the head of debility, three in number. These were cases of men who had been greatly reduced by repeated attacks of ague, marasmus, and malarial cachexia. The immediate cause of death in these cases is exhaustion consequent on an attack of uncontrollable diarrhœa. To diarrhœa are attributed two deaths, to pneumonia two deaths, and to phthisis, jaundice, sun-stroke, and ague, each one death.

Epidemics.

XVIII. Epidemics.—At Alipore there was an epidemic of mumps among the men of the wing of the 39th Native Infantry in September and October. It did not spread much among the men of the 28th Punjab Native Infantry, there being only 3 admissions for that disease.

Vaccination.

XIX. Vaccination.—There were no cases of vaccination during the year.

Recommendation.

XX. Recommendation.—On December 16th, when the regiment was in camp at Delhi, as the men felt the cold at night very much, having just come up from Lower Bengal, and as it seemed to be a great agent in producing the slight aguish and bronchitic attacks which were the chief causes of admission into hospital, I recommended that rum should be obtained from the Commissariat Department, and that such men as were willing should be allowed to purchase rations to the amount of 2 oz. daily. This was sanctioned, the rum obtained. Very many men availed themselves of the privilege. The rum was usually taken with hot water at night, and proved, I believe, very beneficial.

Special remarks.

XXI. Special remarks.—As I was with the regiment for little more than two months of the year, any special remarks which I shall have to make must of necessity be very brief. There is one point, however, on which I would wish to dwell. It was very evident that their residence at Alipore had told greatly upon the health of the men. Although men of very fine physique, indeed, they were nearly all weakly, colour bad, enlarged spleens were common; with a tendency to a scorbutic condition, as evidenced by spongy gums. It seemed very undesirable that, if it were possible to avoid it, the regiment should have been left a third year at Alipore. It was this last year of their residence that seemed to have most affected them. I believe that up-country regiments do not stand a long

Marches.

residence in Lower Bengal. When the regiment began its march to Delhi from Cawnpore, it was very weakly. Cases of ague and dysentery were very common, and I had at one time 70 on the sick and convalescent list. The march, however, and the exercises at the camp had a wonderful and most gratifying effect upon the condition of the men, and their condition now presents, indeed, a marked contrast to that when I first received charge at Alipore. A glance at the number of deaths and men invalided during the three years of residence at Alipore, shews very clearly how steadily progressive in their action were the deteriorating influences. In 1873, the first year, the number of deaths was 7, and 27 men were invalided; in 1874 there were 12 deaths, and 43 men invalided; and in 1875 there were 22 deaths. The

Invaliding

number invalided is written 18, but a great number will have to be invalided this year from the effects of disease contracted at Alipore. From this we see at once that the number of deaths and cases invalided were nearly doubled with each year of residence. The duty at Alipore is excessively severe, and is certainly a great cause of the ill condition of the men. Surgeon Price, in the annual report for 1874, called attention to the diminution of cases of dysentery since the men were supplied with municipal water. This diminution has been progressive—

In 1873 there was 152 cases of dysentery.
„ 1874 „ 124 „ „
„ 1875 „ 84 „ „

Inspection.

The Deputy Surgeon-General of the Presidency Circle inspected the hospital and sanitary arrangements of the regiment at Alipore on the 29th October 1875, and reports that the men were located in the pucca barracks at Alipore, and were not overcrowded; the ventilation of the building was

Water-supply.

good. Municipal filtered water is brought daily to the lines in carts for cooking and drinking purposes, and is of excellent quality, and supplied in sufficient quantity; for washing and other purposes, water from tanks within the lines is used. The ground lies rather low, but is reported on as being well drained.

Latrines.

The latrine is situated about ¼ of a mile from the lines in the fields to the west; it consists of a range of unroofed compartments of pucca walls, 5 feet high, and provided with wooden seats, beneath which pans are placed for the reception of the excreta; the "dry earth" system has not been introduced, and, in consequence of the use of water only, the sanitary condition of the

Hospital.

erection was very defective. Hospital accommodation is described as ample for all requirements of the regiments, and the arrangements for the proper treatment of the sick were in an efficient state.

Digitized by Google

Mr. Cockburn also inspected the men of the regiment off duty, and describes them as being on the whole a tall, fine and healthy-looking body of men; the recruits too, he considered, as being a promising lot of young men.

Left Wing 39th Native Infantry at Alipore.

Surgeon W. Galloway, 45th Regiment Native Infantry, submits the sanitary report of the left wing of the 39th Regiment Native Infantry, and from it the following information has been obtained:—

Medical Officers.

I. Medical Officers.—The following officers were in medical charge during the year:—

Surgeon Gordon Price	...	from 1st January to 25th July.
Surgeon Major R. T. Lyons	...	„ 26th „ „ 15th September.
Surgeon H. A. C. Gray	...	„ 16th September to 13th October.
Surgeon W. R. Murphy	...	„ 14th October to 3rd November.
Surgeon J. C. G. Carmichael	...	„ 4th November to 6th December.
Surgeon W. Duncan	...	„ 7th December to 31st idem..

Location and movements.

II. Location and movements.—The right wing was at Alipore from the 1st to the 26th January, when it was relieved by the left wing, which continued at Alipore to the end of the year.

Lines, barracks and huts.

V. Lines, barracks and huts.—The huts occupied by the men of the wing of the 39th Native Infantry seem to have fallen into a state of disrepair during and since last rains, and the medical officer states that they now require to be looked to, or else he anticipates great inconvenience to the men during the coming monsoon.

Latrines. Drainage.

The latrines are not far from the lines, and are kept in excellent sanitary condition. The *drainage* is described as being good.

Water-supply.

Municipal water is supplied twice a day for cooking purposes and for drinking, but that employed for bathing and washing is obtained from tanks situate in the lines.

Diet. Clothing.

IX. Diet.—In order to be entitled to the compensation for dearness of provisions allowed by Government, each man has to draw the full amount of atta, dhall, ghee and salt laid down in General Orders. There were no admissions from scurvy during the year; the clothing is said to be suitable in every way; the duties have been rather heavy, and the men had on the average but 3·22 nights in bed, while for the last two months in the year, Mr. Galloway reports that they had but 1·50.

Hospital.

XIV. Hospital.—The hospital is the same as that occupied by the sick of the 45th Rattray's Sikhs, and part of the sick of the 16th Native Infantry. It is a two-storied pucca building with ample accommodation, bath-rooms, &c., and is in good repair.

Principal causes of sickness.

XVI. Principal causes of sickness.—Malarious fevers and bowel complaints are the chief causes of admissions. The former gave 49·37 per cent. of the total admissions, and the latter 16·12 per cent. I do not know whether the cases were severe or otherwise, but presume they were not, as no deaths occurred from the former cause, and only one from bowel complaint.

Principal causes of mortality.

XVII. Principal causes of mortality.—Three deaths occurred in hospital—one, a patient who had been suffering for a long time from chronic diarrhœa. He had been 118 days in hospital. In the second case the man died shortly after his admission, and quite unexpectedly, and at the *post mortem* examination, extravasation of blood into the lungs was found to be the cause of death. The third case is said to have been from serous apoplexy, but no *post mortem* examination could be made. Two died at their homes while on sick leave. The causes of death are unknown.

Epidemics.

XVIII. Epidemics.—There were 18 cases of mumps. The disease appears to have been mild and could scarcely be called epidemic.

Vaccination.

XIX. Vaccination.—None have been vaccinated at Alipore during the year; probably the men are all protected, and the recruits are at head-quarters.

Digitized by Google

10th Regiment Native Infantry—Barrackpore.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Cawnpore, January 1869, from Shahjahanpur and Moradabad.	201·1	·5	4·7
1871 ...	Ditto ditto.	177·9	·9	4·2
1872 ...	Barrackpore and Alipore, April 1872.	275·4	2·1	7·95
1873 ...	Ditto ditto.	175·9	3·3	5·63
1874 ...	Barrackpore ...	172·27	2·67	6·45
	Average ...	200·51	1·89	5·78
1875 ...	Barrackpore ...	230·93	6·44	13·34

Surgeon W. Duncan has submitted the sanitary report of the regiment for the year 1875.

Medical Officers.

I. Medical Officers.—Surgeon W. Duncan held charge of the regiment throughout the year. Surgeon W. Duke, A.M.D., held charge of a detachment at Dum-Dum from 1st January to the beginning of November. Surgeon B. Connolly, A.M.D., was incharge of that detachment for the remainder of the year.

Location and movements.

II. Location and movements.—The regiment remained at Barrackpore up to the 3rd December, then proceeded to Alipore, thence on 20th December into camp on the *maidan* at Calcutta. A detachment averaging 118 strong was stationed at Dum-Dum thoroughout the year. This detachment was relieved every three months, and its sick were replaced by men from headquarters.

Lines, barracks and huts.

V. Lines, barracks and huts.—The same barracks and huts were occupied by the regiment as in the past two years. One-half of the buildings were kept in a tolerably fair state of repair, the other half remained in a very dilapidated condition during the greater portion of the year, and were not repaired until the rainy season had passed. These buildings were leaky, and had their thatch coverings in a very rotten condition, but it is questionable if much of the excessive amount of sickness was in any way connected with the buildings, when the fact is observed that the men who were most unhealthy resided in the barracks which were in the best state of repair. At Alipore, the regiment occupied the barracks vacated by the 28th Regiment. In Calcutta, the regiment was in camp with the usual service tents. There was no overcrowding in the barracks, and the means of ventilation appeared to be amply sufficient.

Drainage.

VI. Drainage.—Little change was effected in the drainage system previously described. Year by year the drains are scraped and deepened, no doubt with the intention of improving them, but with an entirely contrary effect to all appearance. At certain seasons they no longer serve as outlets for the surface water, but as inlets for that of the river and tanks, and they, in consequence, retain the water, into which all the surface filth of the station has been washed, and this stagnant water, while it is undergoing the process of being gradually dried up, gives off the most offensive odours; on account of these odours many portions of the station can barely be inhabited during several weeks in the year. The artificial system of drainage may, therefore, be said to be operative for only a portion of the year.

Water-supply.

VIII. Water-supply.—During the first portion of the year, the water was, as formerly, obtained from tanks, and as these tanks were filled by the surface drainage of the station, it may be considered that the supply was of very doubtful purity. Since May, the Pulta water was brought into the station, and the result is reported on as being satisfactory in every way.

Diet.

IX. Diet.—The articles of food exposed in the regimental bazar were found thoroughout the year to be almost invariably of good quality. Only on one occasion was the flour found to be of inferior quality. Vegetables could at all seasons be obtained, but they were somewhat expensive, and a considerable number of men used them very sparingly. Some men appear to have never used them, or considered them necessary as an article of diet. Under-feeding, or, at all events, improper feeding, might at one time be said to have been almost universally prevalent in the regiment. Weekly inspections were held as in the previous year, and all men found in low bodily condition, or in any way exhibiting scorbutic symptoms, were selected and sent to be dieted in the lines under the supervision of their native officers, but with little or no beneficial effect in as far as improvement in physical condition could be observed. Commencing in the month of May, it was observed that a gradual but steady deterioration in the physical condition of the men had set in, and this deterioration went on increasing from month to month until the regiment as a body was nearly, if not quite, unfit for active duties of any sort. At the outset it was not found that the men suffered from any specific desease; in fact, nothing could be observed beyond the slow and gradual wasting of muscle. When this had proceeded to a certain extent, some men exhibited marked anæmic symptoms, others scorbutic, others again suffered from a slow and Painless enlargement of the spleen; the old men, as a rule, suffering from the scorbutic symptoms, and the young from splenic enlargements. The major part of the regiment in the condition described suffered most severely from the ordinary malarial fevers of the climate, and, at one time, more than half the strength present was in hospital under treatment. In hospital, diet was ordered for all found in any way emaciated, and stimulants, anti-scorbutics and quinine were freely given, but in very few cases were

Under-feeding.

Digitized by Google

these measures followed by any improvement. Such a large number of patients continuing in this condition without improvement, caused further enquiries to be made concerning the nature of food in use, and checks were introduced in order to ascertain the nature and quantity of food brought into hospital. It was found that patients for whom certain articles of food were ordered, and for whom advances were obtained, did not purchase the articles considered necessary for them, but retained the money for other purposes. After this discovery, any extra dieting in hospital was taken entirely out of the hands of the patients, and each man was furnished with his extra diet in the form of a ration. A considerable improvement followed on this, and the numbers in hospital rapidly diminished. A very large number of men in the regiment have, however, got their constitutions so irretrievably damaged, that it is questionable if ever they will become fit again for military service, and this is most notably the case among the recruits.

X. Clothing.—The clothing supplied seems to be very well adapted to all purposes in ordinary cantonment duties. Recruits do not seem to be very well supplied with clothing of any kind. The boot worn is the ordinary ammunition boot. It is not made to fit the foot of the wearer—scarcely ever does fit, and so cannot be looked on as a very serviceable article of covering. Clothing. Boot.

XI. Duty and employment.—The men were employed in their own regimental guard duties and parades, and station duties, such as guards and orderlies. The number of nights in bed varied from about 3 to sometimes 1½ and a little over. When the men became weakly, they were relieved of some of their parades, and eventually, of all duties beyond their regimental guards. Duty.

XIV. Hospital.—The hospital the same as described last year. When the regiment left Barrackpore, the Alipore hospital was occupied. At both places the hospitals were everything that could be desired. At Barrackpore a large number of the sick were treated in tents, the hospital accommodation having proved insufficient on account of the large amount of sickness. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	608·82
Absent	74·20
Total	683·00

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of Strength per Annum. Admissions.	Deaths.	Daily average sick.
Head Quarters at Barrackpore and Alipore	1st Jan. 1875	31st Dec. 1875	490·65	1,140	28	76·16	232·24	5·70	15·52
Detachment at Dum-Dum...	1st Jan. 1875	Ditto ...	118·17	266	5	5·10	225·09	4·23	4·31
Total ...	...	...	608·82	1,406	33	81·26	230·93	5·42	13·34

Number of deaths in hospital	33;	out of hospital	11;	total	44;	per cent. of total strength ... 6·44
„ invalided ...	...	...	22;	„	„	... 3·22
„ sent on sick leave	...	...	57;	„	„	... 8·34
„ of days spent in hospital	29,659·9;	per admission	21·09;	per man of total strength		... 43·42
„ „ on sick leave	8,436;	per man ...	148;	„	„	... 12·35
Total temporary loss of service per man of total strength ... 55·77						

As compared with previous years—

Years.	Stations.	Per cent. of Strength. Admissions.	Deaths.	Daily Sick.
1868 ...	Mooltan, May 1866	89·1	·5	2 7
1869 ...	Cawnpore, January 1869	111·7	2·1	3·7
1870 ...	Ditto ditto	201·1	·5	4·7
1871 ...	Ditto ditto	177·9	·9	4·2
1872 ...	Barrackpore and Alipore, April 1872	275·4	2·1	7·9
1873 ...	Barrackpore	175·9	2·4	5·6
1874 ...	Ditto	172·2	2·2	6·4
1875 ...	Ditto	230·9	5·4	13·3

Digitized by Google

The only tangible cause operating to produce such a high sick and mortality rate in the past year, was that detailed in paragraph *IX*. Probably some unknown causes may have been in operation in the production of so much sickness, as also mental depression. All the men in the regiment suffered from extreme depression mentally, and a large number of them were very anxious to leave the regiment, not caring to have further service in Bengal. The only conclusion I can arrive at is, that much, if not the greater proportion, of the sickness was due to malarial poison acting on men in a weak bodily condition and suffering from great mental depression. What I think supports this view is the fact, that the poor and badly nourished inhabitants of the district suffered in the same manner as the sepoys of the regiment.

Principal causes of sickness.

XVI. Principal causes of sickness.—The diseases which caused the greatest number of admissions were, ague 573 cases, general debility 354, hypertrophy of spleen 114, dysentery 73, diarrhœa 28. Other diseases in the Return were of the usual ordinary nature and require no notice. The cases of ague were of a mild character, except where complicated with anæmia and scorbutic symptoms. Under general debility are classified a number of cases in which there was great emaciation and general weakening of the vital power, without the specific symptoms of any particular disease. Some of the cases followed on long-continued illness from ague, others, and the majority from the use of an insufficiently varied diet. Under hypertrophy of spleen are placed cases of simple enlargement, which were unaccompanied by febrile or local symptoms. Recruits chiefly suffered from this disease, and few of them escaped. The cases of dysentery and diarrhœa were usually of a very severe character, and they were almost invariably accompanied with anæmia or a scorbutic taint. The scurvy cases were simply the result of abstention from fresh vegetables.

Deaths.

There were 33 deaths in hospital during the year, and from the diseases as under—

Enteric fever	...	... 1	486 Colic	...	... 1
15 Ague	...	... 4	524 Splenitis	...	... 1
54 Scurvy	...	... 1	528 Hypertrophy of spleen		... 8
466 Dysentery	...	... 4	905 General debility	...	... 7
484 Diarrhœa	...	... 6			

In the case of enteric fever, death took place from perforation of the gut. Adhesions had taken place between the gut and parieties, but had become separated during an attempt the patient made to get out of bed. In the case of scurvy there was infiltration of the cellular tissue followed by ulceration and gangrene. In all the cases of ague and general debility prior to death, there were symptoms of embolism, and on examination after death the heart's cavities were found to contain clots of decolorised fibrin. When death occurred suddenly and with convulsions, the left cavities contained the clots, and when death took place slowly and with much oppression of breathing, the right cavities contained them. In some of the latter cases, complete tubular casts of the pulmonary artery and its branches were obtained. In hypertrophy of spleen, death was preceded by diarrhœa, or most frequently diarrhœa and hæmorrhage from the intestinal tract.

Recommendations.

XX. Recommendations.—The chief recommendations made during the year were with regard to the dieting of the men. The recommendations made and the system introduced into the hospital have been detailed. The system when fully carried into effect was followed by a marked improvement in the condition of the sick. I do not know what, if any, means were adopted to ensure that the men dieted themselves properly in the lines.

Remarks.

XXI. Remarks.—The large amount of sickness in this regiment is supposed by several of the officers to be due not to the use of an improper diet, but to other causes: 1*st*, it is supposed that a long residence in Bengal is sufficient to account for much, if not all, of the sickness. It may here be remarked that out of a total number of admissions at head-quarters of 1,140, 503 admissions took place among men of two years' service and under. The recruits alone contributed no less than 282 admissions during the year. Hence it would appear that a

Recruits.

residence of any duration, however short, would prove equally injurious. The recruits were on joining a healthy body of men and of good physique. 2*nd*, sickness was due to the bad conservancy arrangements and drainage of ground in the vicinity of the lines. This may probably be the case; but if so, the active agent in the production of disease could only have come into operation in the past year, and it must have lain dormant in previous years, as the conservancy arrangements were then the same. Succeeding regiments will suffer from this

Enteric fever.

agent now that it is operating. During the year, there were two cases of enteric fever, and both men were previously resident in Dum-Dum. 3*rd*, the duties were supposed to cause a large amount of sickness. The nights in bed were certainly shewn to be very few, but the labor exacted was not of a very arduous character, nothing beyond a few hours on general duty in the twenty-four. No other labor of a severe nature appears to have been undertaken by the men. If one or any of these agents operated in the causation of disease in this regiment, they certainly did not operate to any appreciable extent in the production of disease in the other regiments quartered in the station. The 39th Regiment, and Detachment 19th Bengal Infantry, both under my care, were not affected in the same way. Both were comparatively healthy, and it was very rarely their recruits were found in hospital. A detachment of the 18th Bengal Cavalry did suffer in a similar manner. They were, however, weakly and scorbutic, and it became necessary to issue rum and lime juice to them.

Inspection.

The Deputy Surgeon-General of the Presidency Circle inspected the hospital and sanitary arrangements of this regiment on the 25th November

Digitized by Google

1875. He reports that the lines were the same as those occupied by the regiment in 1874; one-half of the barracks and huts were kept in a fair state of repair, but the other half were in a dilapidated and leaky condition, and were not repaired until towards the latter end of the rains: there was no overcrowding of the men in the barracks or huts.

Water-supply. Tank water had been used for drinking and cooking purposes until the month of April, when the Calcutta municipal water was laid to the lines, and was apparently duly appreciated by all who used it.

Drainage, &c. The drainage, conservancy, and latrines are reported to have been in a satisfactory condition.

Hospital. The hospital afforded good accommodation for 119 sick; and when this number was exceeded, the patients were treated in tents pitched in the compound; all the hospital arrangements were satisfactory, and the medicines and instruments were carefully kept.

Sickness. On the morning of his inspection, Mr. Cockburn inspected all the men of the regiment who were off duty, and they were considered by him to be, as a rule, sickly looking and badly nourished; and four-fifths of the men in hospital were found to have more or less enlargement of the spleen, and a large proportion also were suffering from scorbutic symptoms. The excessive amount of sickness during the year was chiefly due to malarious poisoning, accompanied by a scorbutic taint, due, no doubt, to the want of a sufficiently varied dietary, and to abstention from fresh vegetable food; the general debility and emaciation of the men went on increasing to such an extent, that in July last the medical officer found it necessary to recommend a reduction in the numbers of parades, which were accordingly reduced to one a week for sepoys, and one daily for recruits, but without any beneficial result; and eventually it became necessary to relieve the men from all duties which could be dispensed with. At this time, 50 per cent. of the men were in hospital, where they were treated with lime juice, stimulants, quinine, and a diet roll was introduced, by means of which each man's daily food consumed was carefully scrutinized. Under this system, a marked improvement in the health of the men became visible, and the Deputy Surgeon-General entirely agrees with the opinion expressed by Surgeon Duncan, that a large proportion of the sickness was due to malarial influences acting on men in a low state of bodily health, consequent on a deficient and badly regulated diet, and one in which the anti-scorbutic elements of food were markedly absent.

Causation.

Detachment, 10th Regiment Native Infantry, Dum-Dum.

Inspection. The Deputy Surgeon-General of the Presidency Circle made his inspection of the hospital for the sick of the detachment of the Native Infantry Regiment on duty at Dum-Dum on the 19th February 1876.

During the year 1875, the 10th Regiment Native Infantry stationed at Barrackpore supplied this detachment of an average strength of 111 men, and the men were located in sheds formerly used by the Artillery, which afforded them very fair and ample accommodation.

Hospital. The hospital is described as a fine, well-raised building and affording much more than the required accommodation for the men of the detachment.

Medical charge. Surgeon B. B. Conolly, Her Majesty's 40th Regiment, and Station Staff Surgeon, was in charge of this detachment. The daily average number of sick from this detachment was 5·33, and there were 5 deaths from it, or at the rate of 4·49 per cent. of mean strength.

Digitized by Google

39th (The Allyghur) Regiment Native Infantry, Barrackpore and Alipore.

Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Jhansi, December 1869	102·2	2·1	4·2
1871 ...	Ditto ditto ...	101.7	1·4	3·4
1872 ...	Ditto ditto ...	130·4	2·1	3·9
1873 ...	Ditto ditto ...	250·03	·86	7·06
1874 ...	Barrackpore, January 74 R. W. Alipore, April 1874	221·6	·10	7·8
	Average	152·18	1·51	5·27
1875 ...	Barrackpore and Alipore	140·49	2·90	6·09

I.—Medical Officers.—List of medical officers who have held charge of the regimental head-quarters and right wing at Barrackpore from 1st January to 31st December 1875:—

Surgeon W. Duncan, from 1st January to 30th April; Surgeon C. J. McKenna, from 1st May to 6th August; Surgeon W. Duncan, from 7th August to 24th November. Surgeon-Major J. W. R. Amesbury, from 25th November to 31st December. The last named officer submits the annual report of the regiment.

List of medical officers who have been in medical charge of the left wing at Alipore—

Surgeon G. Price, from 1st January to 26th July.
Surgeon-Major R. T. Lyons, from 27th July to 14th September.
Surgeon H. A. C. Gray, from 15th September to 13th October.
Surgeon W. R. Murphy, from 14th October to 3rd November.
Surgeon J. C. G. Carmichael, from 4th November to 6th December.
Surgeon W. Duncan, from 7th December to 20th December.
Surgeon-Major J. W. R. Amesbury, from 21st December to 1st January 1876.

Movements of regiment.

II. Movements of regiment.—The regiment reached Barrackpore from Jhansi on the 21st January 1874; the right wing at once proceeded to Alipore, where it remained until relieved by the left wing in January of the following year, and, with the exception of the regiment being located on the *maidan*, Calcutta, from the 21st December to 10th January 1876, it has had no marching. The left wing relieved the right wing, returning to Barrackpore on 10th January 1876.

Topography.

III. Topography and Physical Geography, &c.—Barrackpore is situated in Bengal, on the river Hooghly, about 15 miles north-north-east of Calcutta, and is a favorite military cantonment; climate same as Bengal generally, moist and warm; the temperature in the hot season ranges between 80° to 103° Fah: in the shade. Cold season about 50° to 80°: Nothing more need be said in regard to this paragraph, the station and all about it is too well known.

Meteorology and climate.

IV. Meteorology and climate.—I submit a table showing the temperature and rainfall of the year, in comparison with the year preceding it, made as carefully and accurately as the instruments supplied would admit of. The direction of the wind has not been carefully noted, I shall therefore omit it in the annexed table.

Temperature and Rainfall of the year 1875 *in comparison with the year* 1874.

Months.	Temperature of air, 1874.			Rain, 1874.		Months.	Temperature of air, 1875.			Rain, 1875.	
	Max.	Min.	Range.	No. of days.	Amount collected.		Max.	Min.	Range.	No. of days.	Amount collected.
January ...	Regiment on march.					January ...	70	58	12	2	1·7
February ...	84	61	23	3	4·2	February ...	81	58	23	0	0
March ...	92	76	16	3	·5	March ...	91	69	22	0	0
April ...	97	76	21	3	1·2	April ...	93	75	18	3	3·8
May ...	93	81	12	1	1	May ...	95	75	20	9	8·6
June ...	92	80	12	6	10·5	June ...	92	81	11	10	11·5
July ...	87	81	6	8	5·5	July ...	84	81	3	9	8·5
August ...	88	82	6	14	9·5	August ...	85	81	4	13	17
September ...	91	77	14	7	9·7	September ...	85	81	4	6	6
October ...	84	76	8	8	14·9	October ...	82	77	5	2	3·3
November ...	81	64	17	0	0	November ...	78	69	9	0	0
December ...	73	60	13	0	0	December ...	72	62	10	0	0

Lines.

V. Lines situated to the rear of the Sudder Bazar; the men, including the drummers, occupy nine (9) buildings, each capable of accommodating 43 men, or half a company; the position is good, and has the advantage of being near the bazar, but the disadvantage of being about one-fourth of a mile from the filtered water pump. The surplus water is carried off by surface drains into tanks. I have not been in Barrackpore during a rainy season, but the drainage is reported satisfactory.

Digitized by Google

Barracks—Built of burnt brick, with thatched roofs, the buildings are raised about 1½ feet from the ground, are in good repair, and well ventilated through the doorways. Barracks.

VI. Drainage.—Natural, and artificial by means of surface drains—sufficient. Drainage.

VII. Conservancy.—Trench system, which seems to answer very well. Latrines situated 250 yards north-west of the lines. Trench system, with shelter over head to protect the men from the sun and rain. These latrines are likewise used by the detachment of the 2nd Bengal Cavalry located here, also by the regimental bazar people. They are in the charge of the Cantonment Magistrate; the excreta is at once buried, and the trenches properly filled in and fresh ones dug as required. During the Regiments' stay in Calcutta with the camp, the following arrangements were adopted: that latrines were erected at some distance from the camp (in Tolly's Nullah); these were divided into compartments, each compartment being furnished with a flat earthenware saucer-shaped receptacle. Behind the latrines, trenches were dug about 40 feet in length, and from 3½ to 4 feet in depth; at daylight, every morning, the excreta from the earthen pans was emptied into the trenches, covered with earth, over which McDougall's powder was sprinkled; during the day (until sunset) each pan as usual was emptied by sweepers into the trenches and dry-earth at once thrown over the excreta, the pans on being replaced were sprinkled with deodorant powder, also the earth in front and around them. On a trench being filled to within a foot and a half of the surface, it was properly filled in with deodorant powder and earth, and levelled. The system worked to my idea most satisfactorily; no smell at any time could be perceived, even when walking through the latrines, excepting that from carbolic acid, which shows that the dry-earth conservancy, when properly superintended and carried out, is much the best for large camps. The urinals were fitted with deep pans, and the urine carted away three times a day in barrel carts, and emptied into the cunettes of the fort; the ground within the urinals was sprinkled two or three times a day with deodorant powder. I have mentioned all this, as my remarks may be deemed useful for other camps. Conservancy. Latrines.

VIII. Water-supply.—All drinking water is supplied to the troops from Maurianipore—filtered; it is good and abundunt, and is much liked by the men; but the pump from which it is obtained is so distant from the lines—quarter of a mile—that all the men, I am sorry to say, do not avail themselves of it. One of the causes is, that the pump from which the water is supplied is not open to native troops until 2 o'clock p. m. daily. I have, therefore, strongly to recommend that a couple of water-carts may be at once supplied for the use of the lines, and also one for the patients in hospital, by which arrangement diarrhœa and dysentery, which are at present prevalent among the men, would soon be checked. At present the water for hospital use is filtered through charcoal, sand, &c.; for all other cooking and drinking purposes, tank water is used. Water-supply. Recommendation.

IX. Diet.—The regimental bazar is situated near and to the left of the lines; it is well supplied with all descriptions of food used by native troops; the prices are high, but as the men are allowed compensation at the rate of Rs. 3 per mensem, they have nothing to complain of; they seem fairly nourished, and I do not consider them underfed as a regiment. Diet.

X. Clothing.—The men are all well clothed; for the rains and cold weather they are provided with good substantial cloaks. During the hot season the ordinary light summer clothing is worn. Clothing.

XI. Duties.—The duties—particularly station duties—have been rather hard, but no injurious effect on the men's health can be assigned to this cause; however, the average nights in bed (2·91) for the wing is too little to keep the men in health. In the Bengal Army Regulations, Section 16, paragraph 1797, page 308, it states that when the number of nights in bed for native troops falls short of four (4), a special report should be made; with the present allowance, it is hardly to be wondered at that men occasionally fall asleep at their posts. Duty.

XII. Exercise.—Nothing in the way of amusements; nothing but duty routiné. Exercise.

XIII. Marches.—The right wing went to Calcutta by railway on the 20th December; the whole regiment was encamped on the *maidan* until the 10th January 1876, when the left wing proceeded to Barrackpore and the right wing took their place at Alipore; the former wing then destinated at Barrackpore the same day (10th June) by Railway. Marches.

XIV. Hospital.—The hospital building is situated about half a mile to the left of the lines; it is formed of one large building 118 × 32, raised from the ground about a couple feet. The roof is thatched and supported by eight pillars on each side: a 7-foot verandah runs on the north and south sides. Also there is a small verandah at each end. The floor is tiled. Ventilation good. I consider the building in good repair and suited to the requirements of the sick. It contains:— Hospital. Ventilation.

Superficial feet of flooring	3,904
Cubic feet of air	62,464

and is built to contain 39 beds, allowing about 1,600 cubic feet of air, and 100 superficial feet of space per bed; if required, it could accommodate 60 patients:—

Average number of patients during the year	22·10
Maximum number of patients during the year	71·00

this was on the 27th February 1875.

The hospital out-offices are in good repair, and the latrine daily visited and kept clean; it is quite large enough for present requirements, but requires partitions of matting between the seats for the sake of decency. The latrine is emptied as soon as used from behind, and the soil thrown into iron receivers and removed twice a day by hospital conservancy carts. Latrine.

Digitized by Google

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding. Strength of the regiment—

Present	597·18
Absent	88·01
Total	685·19

Station.	Period. From	Period. To	Strength.	Total No. of Admissions.	Total No. of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths	Daily average sick.
Head Quarters, at Barrackpore.	1st January 1875.	31st December 1875.	379·69	442	9	22·10	116·41	2·37	5·82
Wing at Alipore ...	1st January 1875.	19th December 1875.	217·49	397	3	14·29	182·53	1.37	6·57
Total ...	...	...	597·18	839	12	36·39	140·49	2	6·09

Number of deaths in hospital 12; out of hospital 8; total	20; per cent. of total strength	...	2·9
„ invalided	40; „ „	...	5·82
„ sent on sick leave	31; „ „	...	4·52
„ of days spent in hospital 13,284; per admission 15·83;	per man of total strength	...	19·38
„ „ on sick leave 5,825; per man 187·90;	„ „	...	8·50
Total temporary loss of service per man of total strength		...	27·88

Principal causes of sickness.

XVI. Subjoined is a tabular form showing the admissions into hospital (average) from the year 1869 to 1874, as compared with last year for wing:—

For the Regimental Head-Quarters.	Malarious Fevers.	Rheumatic affections.	Venereal complaints.	Chest affections.	Bowel complaints.	Cutaneous.	Sore-feet.	General debility.	Other diseases.	Total.
Average admissions into hospital for the last 5 years	477	57	26	25	82	64	64	21	67	883
Admissions into hospital, 1875 ...	144	19	8	19	89	16	25	41	81	442

Fevers.

From the above table it will be seen that the admissions for the year under notice is exactly half what the average has been for the five years previous. I think this does not speak badly for the climate of Barrackpore. The admissions from malarious fevers are but ¼ of the five preceding years, and although bowel complaints have slightly increased in number, most of the cases have been of a mild character, with the exception of one of cholera and three of diarrhœa with choleraic symptoms which, although hardly coming under the head of true cholera, proved fatal. The number under the column of other diseases was of trifling importance and of short duration. Bronchitis has been chiefly of an acute form, and may, in most cases, be attributed to catarrh in the first instance. Among the cutaneous diseases are psoriasis, herpes, eczema, and itch, &c.; all have been discharged cured. The "general debility" is mostly among the old and worn-out men, who will be brought before this year's annual invaliding committee. There was one case of synovitis of the knee-joint in which the leg was allowed to become bent at right angles to the thigh, but by means of a double inclined plane and screw, the leg has been completely straightened and promises to become again a useful member.

Synovitis.

Principal causes of mortality.

XVII. The nominal return of deaths and gain and loss statement show the mortality for the whole regiment, namely, at—

Regimental head-quarters in hospital	9
Regimental head-quarters out of hospital	6
With wing at Alipore in hospital	3
With wing at Alipore out of hospital	2

Seven of those men who died out of hospital were on sick leave, and one was shot.

The principal cause of mortality during the year has been from bowel complaints, and in almost every case the cause could be traced to impure tank water. Mortality in hospital: diarrhœa 4, splenitis 3, ague 2, phthisis pulmonalis 1, apoplexy, pulmonary 1, cholera 1, gun shot 1, apoplexy 1, general debility 1; 9 of these cases occurred at head-quarters' hospital, and three in the Alipore hospital; only two cases have terminated fatally since the 18th September last.

Epidemics.

XVIII. Epedemics.—There was no epidemic during the year.

Vaccination.

Vaccination.—Number of men unprotected 75, number vaccinated during the year, none.

Inspection.

Mr. Cockburn inspected the right wing of this regiment at Alipore on the 20th January, and the left wing at Barrackpore on the 21st of the same month.

Lines.

The lines at Barrackpore he considered to be well situated, and he found the barracks in good repair and well ventilated.

Digitized by Google

Water for drinking and cooking purposes can be obtained from a pump supplied by the municipal filtered water, but owing to its distance from the lines, and to its not being available for the native troops until 3 o' clock P. M., it is believed that some of the men do not use it, but draw their water-supply from tanks. The "trench system" of latrine with movable screens is in use, and is reported on as working well, and as free from any offensive smell. Hospital accommodation and the ventilation of the building were good, and all arrangements for the proper treatment of the sick were satisfactory. Water-supply. Conservancy, &c. Hospital.

4th Regiment, Native Infantry—Bhagalpur.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Allahabad December 1867 from Jhansi.	211·2	3·2	4·4
1871 ...	Cachar December 1870...	309·1	5·06	1·08
1872 ...	Bhagalpur December 1872.	191·8	3·1	11·2
1873 ...	Ditto ditto.	96·04	1·49	3·9
1874 ...	Ditto ditto.	58·7	·71	1·94
...	Average	173·36	2·71	6·50
1875 ...	Bhagulpur and Nya Doomka.	94·74	·39	3·49

I.—Medical Officers.— Surgeon A. J. Wall, M. B., was in medical charge of the regiment from 1st of January to the 10th of February, and Surgeon E. Palmer from this latter date to the end of the year. Surgeon-Major N. B. Baillie had charge of the regiment during Surgeon E. Palmer's absence on privilege leave. Surgeon E. Palmer has submitted the annual sanitary report. Medical Officers.

II. Location and movements.—The head-quarters of the regiment remained at Bhagalpur during the year. Owing to disturbances in Sonthalia, the right wing of the regiment with two European officers marched from this on the 2nd of April and was quartered at Nya Doomka till the 7th of December, when it was relieved by the left wing. A detachment of 176 men with one European officer marched from this to Bankipore on the 20th of December, arrived there on the 1st of January, remained there for three days, and rejoined head-quarters on the 17th of January. Location and movements. Detachment.

III. Topography and physical geography.—The cantonment of Bhagalpur occupies the site of an old fort about three miles from the centre of the civil station of that name, which is situated on the right bank of the Ganges. The saying amongst the natives regarding the fort is that, long before the Mahomedans came to India, there lived a Hindoo prince, named Koran, who built the fort, and from whom it took the name Koran Gurh, which is its common denomination. It served in former days as a place of refuge to which the Hindoo people living in the neighbourhood south of Bhagalpur used to repair when the robber clans invaded and pillaged the surrounding country. Topography, &c.

A peculiarity about the construction of the Bhagalpur fort is, that here and there shafts of brick work are found from six to seven feet square cemented with clay only, and going down to a considerable depth; that long ago two such shafts were dug out, and they were found to go down about 24 feet; nothing was found at the bottom but sand. The moat surrounding the fort is said to have been formerly filled with water supplied by the hill stream running into the Ganges at Chumpanala. The cantonment is surrounded by the bazar which comes close up to its base. Bhagalpur Fort.

IV. Meteorology and climate.—Mr. Palmer states that the climate is good, and the heat is never excessive, but at the termination of the rains, and when the river begins to fall, fevers and diarrhœa become very prevalent in Bhagalpur. Meteorology and climate.

No change has been made in the disposition of the regimental lines, which are said to be good of their kind, and to have been kept in good repair throughout the year. Lines.

Owing to the elevated position of the station, the natural drainage is very good and efficient, and all surface water runs off nearly as soon as it falls. Drainage.

A site about 300 yards north-east of the lines had just been granted, it is stated, on which to erect the regimental latrines: at present the men resort to the jungle for necessary purposes. In the hospital latrine the "dry-earth" system is employed and answers well, the mixed night soil and clay is removed in a Crowley's conservancy cart, and buried. Latrines.

Digitized by Google

Water. The water is stated to be of good quality and abundant, is considered to be free from any organic contamination, but contains a large quantity of lime.

Food. Throughout the year the supply of food of good quality was abundant, and no case of under-feeding has been noticed by the medical officer.

Clothing. The clothing is described as being well suited to the climate, and to the duties the men have to perform.

Boots. As reported last year, the men wear boots of the ammunition pattern, these boots are of native manufacture, and are much too heavy; they also fit badly, and in this way cause foot sores, thus rendering many men inefficient. On this point Mr. Palmer thus expresses himself: "I am of opinion that the boot is quite unsuited for the native soldier, who cannot afford to buy socks."

Clothing of recruits. The recruits on joining are provided with a warm coat, and both recruits and sepoys are obliged to provide themselves with good warm rezais; the medical officer considers the head dress to be neither ornamental nor useful, as it leaves the most important part of the head quite unprotected.

Duty. The duty during the year consisted of the ordinary drills and parades, and was not excessive. The number of nights in bed is not stated.

Marches. Beyond the marches made by the right wing to Nya Doomka, and by a detachment to Bankipore, the regiment did not move during the year.

Hospital. The hospital has been previously described, and is now reported on as being in good repair and affording ample accommodation for the sick of the regiment under ordinary circumstances.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	...	...	...	...	439·15
Absent	...	...	...	...	61·89
			Total	...	501·4

Station.	Period. From	Period. To	Strength.	Total No. of Admissions.	Total No. of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head Quarters at Bhagalpur	1st Jan. 1875	31st Dec. 1875	439·15	391	1	10·7	89·03	·22	2·43
Detachment at Bankipore	20th Dec. 1875	Ditto.	176·00	8	...	2·95	137·78	...	1·70
Total ...	...	...	439·15	399	1	13·2	90·86	·22	3·01

Number of deaths in hospital 1; out of hospital 0; total 1; per cent of total strength	...	...	·19
„ invalided ... ... 21; „ „ ...	...	...	4·19
„ sent on sick leave ... ... 1; „ „ ...	...	...	·19
„ of days spent in hospital 5,207; per admission 13·05; per man of total strength	...	...	10·39
„ „ on sick leave 185; per man 185; „ „ „ ...	...	...	·36
Total temporary loss of service per man of total strength	...	...	10·76

Principal causes of sickness. *XVI. Principal causes of sickness.*—In order of frequency, the following diseases caused the greatest loss of service during the year:—intermittent fever 139, diarrhœa 30, dysentery 18, blister of feet 26, bronchial catarrh 15, and bronchitis 12, abscess in cellular tissue 14, ulcers 10, contusions 10. The right wing returned from Doomka in December, and during that month there were 67 admissions.

Principal causes of mortality. *XVII. Principal causes of mortality.*—Only one death occurred at head-quarters during the year and this was from phthisis pulmonalis. The post mortem examination revealed extensive tubercular deposits in both lungs; the apex of the left lung was occupied by a cavity filled with liquified tubercle.

Epidemics, &c. *XVIII. Epidemics, &c.*—The regiment was not visited by any epidemic disease during the year.

Vaccination. *XIX. Vaccination.*—Thirty-four men were vaccinated, and in seven only was the operation completely successful. This result is said to be due to the fact that most of the recruits had small-pox in early life, and on this account any vaccination of them was quite unnecessary. The regiment is considered to be well protected against small-pox. Several children and camp-followers were vaccinated during the year.

XX. Recommendation.—During the whole of August, cholera and small-pox were extremely prevalent in the bazars in the immediate neighbourhood of the cantonment.

Recommendation. It was recommended that the sepoys should be prevented visiting the bazars as much as possible; and that any man suffering from diarrhœa should at once proceed to the hospital;

Digitized by Google

other suggestions on trifling matters were made verbally and always met with the attention of the commanding officer.

XXI. Special observations.—The right wing of the regiment returned from Nya Doomka in December. Many of the men were in a bad state of health and in a few cases their gums were soft and spongy, and since their return to head-quarters have suffered much from fever. During the month of December, 67 men from the right wing were admitted into hospital. There are still in the regiment many men who never should have been enlisted. Special observations.

Dr. Irving, Deputy Surgeon-General of the Dinapore Circle, made his medical and sanitary inspection of this regiment on the 10th of November 1875. He reports that the hospital was a well built pucca edifice, consisting of a centre ward and two good enclosed verandahs, the whole place looked very clean and neat. There were 27 men in hospital, but the greater number of them were cases of fever from the left wing at Nya Doomka; the men stationed at Bhagalpur were, however, said to be very healthy, and there was but one death at head-quarters during the year. Dr. Irving considers the sepoys to be a fine set of stalwart Brahmins and Rajpoots. Inspection. Hospital.

Right Wing 4th N. I. at Nya Doomka.

I. Medical Officers.—Surgeon Z. A. Ahmed was in medical charge during the time the wing was quartered at Doomka. Medical Officers.

II. Location and movements.—The right wing and two European officers marched from Bhagalpur on the 2nd of April and were stationed at Nya Doomka till the 7th of December. Location and movements.

III. Topography, &c.—Nya Doomka is in north latitude 24° 1′ and east longitude 87° 18′. It is bounded on the east by the Gedal hills, on the west by the Lorana hills and the More river, on the south by a deep nulla and water-course. There is no natural boundary on the north. Topography, &c.

IV. Meteorology and climate.—The following statement shows the temperature and rain-fall during the year :— Meteorology and climate.

	Maximum.	Minimum.	Rain days.	Inches.
January	66·38	59·35	4	2·30
February	72·39	63·96	4	·57
March	82·09	74·25	1	·22
April	87·70	81·50	6	1·57
May	85·74	81·09	9	4·43
June	85·16	82·41	15	13·58
July	83·96	81 40	23	9·55
August	82·54	80·83	23	15·10
September	82·76	80·46	17	6·65
October	80·80	76·74	5	1·55
November	74·33	69·23	0	0
December	69·77	63·06	0	0

The climate is mild and the heat never excessive.

V. Lines and barracks.—The regimental lines are built on an elevated site. When the wing arrived at Doomka, there was no accommodation, and the sepoys lived in small huts, but since then, four half-company thatched barracks have been built; each barrack is 129 feet 10 inches in length, 19 feet 4 inches in breadth, and 14 feet 9 inches in height. They are ventilated by two openings at the ends and by four at the sides. They are built parallel to each other, having an intermediate space of 98 feet, so as to allow of free ventilation. Lines and barracks.

VI. Drainage.—The drainage of the line is described as good. The natural drainage of the station is greatly obstructed by two bunds: one situated at the north of the station, the other in the centre. Drainage.

VII. Conservancy, &c.—Latrines were not in use, and the men consequently had to resort to the jungle for necessary purposes, the hospital was provided with a small building of a temporary nature for a latrine, and the arrangements in it were rather defective. Conservancy, &c.

The water-supply is described as of good quality, but insufficient in quantity. Water-supply.

The supply of all the ordinary sorts of food was sufficient, but fish and all kinds of vegetables were very scarce. The price of all kind of food is said to have been high. Supplies.

XIV. Hospital.—Pending the construction of a suitable hospital, half of one of the barracks was temporarily utilized for the accommodation of the sick. Hospital.

Digitized by Google

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding—Strength of the right wing—

Present	...	...	...	...	...	258·53
Absent	...	...	...	...	...	*Nil.*
					Total ...	258·53

Station.	Period		Strength.	Total No. of.		Daily average number of sick	Percent of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Right wing 4th Regiment N. I. at Nya Doomka ...	2nd April ...	7th Dec. 1875	258·53	262	1	11·23	141·05	·53	4·34

Number of deaths in hospital 1; out of hospital 1; total 2;	per cent. of total strength	...	0·77
„ invalided 12;	„	„	...	4·65
„ sent on sick leave 7;	„	„	...	2·71
„ of days spent in hospital 2,948;	per admission 11·25;	per man of total strength	...	11·40
„ „ on sick leave 973;	per man 139;	„	„	...	3·76
Total temporary loss of service per man of total strength			...	...	15·16

Fever.

Almost all the admissions into hospital are said to have been from fever. Only one death occurred in hospital and was caused by pleurisy; one man died while at his home on sick leave.

33rd Regiment, Madras Native Infantry, at Doranda.

Inspection.

Dr. Irving, Deputy Surgeon-General of the Dinapore Circle, made his inspection of the hospital and lines of this regiment on the 9th February 1876.

Medical charge.

Surgeon C. Lloyd, M. D., of the Madras Medical Department, was in medical charge.

Hospital.

Dr. Irving report that he found every thing connected with the hospital in excellent order and scrupulously clean; all the details for the proper treatment of the sick were very satisfactory. Since the last inspection, the wooden doors had been replaced by glass windows, and a new pucca floor had been laid down. There were ten patients in hospital, none of them being seriously ill.

The average strength present of the regiment at head-quarters was 607, and furnished 226 admissions into hospital, and 4 deaths; the daily average number of daily sick was only 9·2, and, in Dr. Irving's opinion, indicated what a healthy station Dorundah must be. As compared with former years, the sickness in the regiment has been as follows:—

	Admissions.	Daily average sick.	Deaths.
1872	149	5·8	5
1873	142	5·6	5
1874	270	18·02	8
1875	226	9·2	4

Conservancy, &c.

The conservancy arrangements, although slightly improved by the introduction of gumlahs and dry earth into the privies in the hut enclosures, were still highly objectionable, and the drains leading from these enclosures are described as being "very filthy and odoriferous." Dr. Irving remarks that he "cannot see why all these filthy privies should not be forbidden, and the men a well as the women ordered to resort to properly constructed places for the purpose at some short distance from the lines to which mehtranees and sweepers should be attached." He also considers it very necessary that a Crowley's conservancy cart should be supplied to the regiment at Doranda, as it could be utilized not only for the hospital, but also for the whole of the regimental lines.

Digitized by Google

ALLAHABAD DIVISION.

(INCLUDING THE STATIONS OF ALLAHABAD, DINAPORE, SEGOWLIE, BENARES, CHUNAR AND CAWNPORE).

Average strength present during the year ...	Cavalry	...	1152·2	Infantry ...	2542·07
„ daily sick per cent. of average strength ...	„	...	2·54	„ ...	3·08
Ratio of mortality per cent. of average strength...	„	...	·44	„ ...	·82

18th Regiment Bengal Cavalry—Allahabad.

YEAR.	STATION.	PERCENT. OF STRENGTH.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Mean Meer November 1870	292·1	3·7	5·67
1871 ...	Ditto Ditto ...	209·04	2·02	3·12
1872 ...	Ditto Ditto ...	132·9	·88	2·9
1873 ...	Allhabad March 1873 ...	133·1	·68	4·75
1874 ...	Ditto Ditto ...	152·51	·44	5·52
	Average	183·9	1·5	4·4
1875 ...	Allahabad	85·13	·22	3·08

I Medical Officers.—The following medical officers have held charge of the regiment during the year:—Surgeon F. W. Wright, from 1st January to 27th March. Surgeon R. A. K. Holmes, from 27th March to 13th April. Surgeon J. C. Shircore, from 13th April to 15th December. Surgeon D. P. Palmer, from 15th to 31st December. The last named officer submitted the annual sanitary report. Medical Officers.

II. Location and movements.—The head-quarters of the regiment has been stationed at Allahabad during the year. Detachments were sent to Barrackpore, Benares, Dinapore and Calcutta, details of which are given under another head. Location and movements.

IV. Meteorology and climate.—There is but little to record under this head beyond that the hot and dry weather of March, April and May is considered by the medical officer to be the most healthy in the year, while a continuance of the rains is a source of increased sickness. The rainfall, however, was greater than in 1874, and the admissions into hospital are stated as having been considerably less than in that year. Meteorology and climate. Rain fall.

V. Lines, barracks or huts.—This regiment occupied the same lines at Papamow as noticed in the Annual Report for 1874, and they are stated to have been kept clean, in a good state of repair, and were not overcrowded. Lines, barracks or huts.

VI. Drainage.—The drainage is reported to have been severely tested during 1875, and was found not to be sufficient. Since then, improvements have been made, and the surface water, it is expected, will rapidly run off. The "trench system" of latrine is still in use, and has answered admirably, but the establishment of sweepers is said to be rather small. The horse litter is generally taken away by a contractor, but if he delays in doing so, it is burned. Drainage. Latrine.

The water-supply is said to have been plentiful and apparently pure; all the wells, however, with the exception of one in the seraie, are "kutcha." The diet of the men was of good quality, sufficiently varied, and of moderate price. Water-supply.

Any instance of underfeeding was immediately noticed by the commanding officer on a report of the matter being made to him. Under-feeding.

The clothing was suitable to the season and to the duties the men had to perform. The duty was light as a rule, and the men had on the average 7·67 nights in bed. Clothing. Duty.

XII. Exercise, amusements and occupations.—Tent pegging and lime cutting constitute the principal amusements, both of which are entered into with great zeal. Wrestling is pursued by many. Leave is granted liberally by the commanding officer. Exercise, amusements and occupations.

XIV. Hospital.—The hospital is reported on as being all that could be desired; its distance from the lines was the only disadvantage, but the position compensated for any such drawback. The bathing-room is fitted up with every convenience, and is said to have been much used by the men in the hot weather. Hospital.

Digitized by Google

Latrine. The latrine is worked on the dry-earth system, and was always clean and free from odour.

Sickness, mortality and invaliding. *XV.—Sickness, mortality and invaliding.*—Strength of the regiment—

Present	...	...	...	...	379·4
Absent	...	...	...	...	74·8
			Total	...	454·2

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-Quarters Allahabad ...	1st Jan. 1875	31st Dec. 1875	343·4	285	1	9·8	82·99	·29	2·85
Detachment at Barrackpore	Ditto	27th Feb. 1875	23·4	28	...	1·7	987·45	...	7·26
Total	.....	.....	379·4	313	1	11·5	85·13	·26	3·03

Number of deaths in hospital 1; out of hospital 0; total 1; per cent. of total strength...					·22
„ invalided	13;	„	„	...	2·86
„ sent on sick leave	4;	„	„	...	·88
„ of days spent in hospital 4,216; per admission 13·05; per man of total strength...					9·28
„ „ on sick leave 702; per man ... 175·5;			„	...	1·54
Total temporary loss of service per man of total strength ...					10·82

Principal causes of sickness. *XVI. Principal causes of sickness.*—Different kinds of ague constitute the principal number of admissions from a climatic influence. Contusions, wounds and fractures, as might be expected in a cavalry regiment, are numerous, and help to increase the number of admissions largely. Boils are frequent and may in many instances be the result of riding.

Principal causes of mortality. *XVII. Principal cause of mortality.*—One death occurred during the year, pneumonia having supervened on ague. Percentage to strength ·26.

Epidemics. *XVIII. Epidemics.*—Cholera appeared in the cantonment, but no cases occurred in the corps.

Inspection. This hospital was inspected by Dr. J. P. Walker, Deputy Surgeon-General of the Allahabad Circle, on the 9th February 1876. There is accommodation in the hospital for only 16 patients, but the average number of in-door patients during 1875 was 9·8; the building was in good order, and, with its surroundings, was both clean and tidy. The treatment of the patients, both general and therapeutic, was satisfactory.

34th (Fatehgarh) Regiment Native Infantry—Allahabad.

Medical Officers. *I. Medical Officers.*—The following medical officers held charge of the regiment during the past year, *viz.*:—Surgeon-Major F. Odevaine, 1st January to 17th March. Surgeon-Major F. W. Wright, 17th March to 20th July, and Surgeon-Major H. W. Spry, 20th July to 31st December. The last named officer writes the report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily Sick.
1870 ...	Lucknow, February 1867, from Barrackpore ...	80·3	·5	2·1
1871 ...	Morar, November 1870...	304·3	·8	10·2
1872 ...	Ditto, ditto ...	234·8	1·6	7·2
1873 ...	Ditto, ditto ...	162·2	·8	6·1
1874 ...	Allahabad ...	128·5	1·44	2·79
	Average	182·	1·03	5·7
1875 ...	Allahabad ...	82·06	·56	2·33

Location and movements. *II.—Location and movements.*—The regiment was stationed at Allahabad during the past year. No detachments have been away from head-quarters.

Topography. *III. Topography.*—The Native lines are situated on high ground close to the right bank of the river Ganges. The boundaries are, north the Ganges; south, native city of Allahabad; east, a broad nulla and low-land (with mangoe topes) which become inundated during the rains; west, the European infantry lines and artillery beyond.

Digitized by Google

IV. Meteorology and climate — Meteorology and climate.

Thermometer.	Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Remark. Thermometer is only allowed.
	1875	74	80	98	106	101	102	94	90	89	76	83	74	

The climate is mild, with but little cold weather; great difference of temperature between the days and nights at that time. The south-west monsoon generally blows with great force from early in April to the setting in of the rains, about the middle or end of June.

V. Lines, barracks, huts.—These have been fully described in the Sanitary Report of the regiment for 1874. Their present condition is satisfactory, being clean, well-ventilated, in good repair and not overcrowded. Lines, barracks, huts.

VI. Drainage.—The lines being built on high ground, the drainage is natural and ground dry very soon after a fall of rain. Drainage.

VII. Conservancy.—The latrines are situated south-west of the lines, open trenches with movable screens, they are kept very clean and work satisfactorily. See report for 1874. Conservancy.

VIII. Water-supply.—Good, from three pucca wells in vicinity of lines; water is sweet and of average purity; no complaints are ever made; it is plentiful, sufficient for all demands. Water-supply.

XI. Diet.—Food is plentiful and of good quality. The sepoys live well and cook their food separately, with the exception of the Sikhs, who eat together and have two regimental cooks. Diet.

X. Clothing.—Good and suitable to climate and season of the year. The sepoys wear ammunition boots on parades and all duties; only Hindustani shoes when in their lines or when off duty. Clothing.

XI. Duty and employment.—Duty by no means excessive. Employment, in ordinary parades, station guards, fort duty and a great deal of their time is taken up by musketry practice. Duty and employment.

XII. Exercise and amusements.—The favorite pastime is wrestling, but of this even not much is done in this station, there being no properly constructed ground for the purpose. Exercise and amusements.

XIII. Marches and service.—The regiment marched into cholera camp on the 20th May and returned on the 3rd June to a place called Doobree, 5 miles away from cantonments; with this exception, it has been stationary here. Marches and service.

XIV. Hospital.—Is a most excellent one, having been originally the European Artillery hospital. It is a pucca building placed on an elevated site on the banks of the river Ganges; it consists of two long wards and verandahs all round, with ample quarters for the medical subordinates in the centre of the building. The latrines are at each end in corners of the verandahs. It is well ventilated, and affords accommodation for about 70 sick. It has recently been placed in thorough repair. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment:— Sickness, mortality and invaliding.

Present	640·97
Absent	65·62
Total	706·59

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Allahabad ...	1st Jan. ...	31st Dec. ...	640·97	526	3	14·96	82·06	0·46	2·33

Number of deaths in hospital	3; out of hospital	1; total 4; per cent. of total strength	... ·56
„ invalided ...	... ...	38; „ „	... 5·37
„ sent on sick leave	... ...	18; „ „	... 2·54
„ of days spent in hospital	5,464; per admission	10·38; per man of total strength	... 7·73
„ „ on sick leave	2,150; per man	119·4; „ „	... 3·04
		Total temporary loss of service per man of total strength	... 10·77

XVI. Principal causes of sickness.—Over 50 per cent. of cases were from intermittent fever, not of a severe type. About 11 per cent. caused by dysentery; successfully treated in all cases by large doses of ipecacuanha. The other diseases were not of much moment, excepting 2 cases of cholera. There is but little syphilis in the regiment. Principal causes of sickness.

In 1873 the total amount of sickness was			1,030
„ 1874	ditto	ditto	816
„ 1875	ditto	ditto	547

Digitized by Google

Fever.

In the year 1873, there were 559 cases of intermittent fever, exceeding by 12 the sum total of all diseases of the past year, thus showing how far better the health of the regiment has been at this station to what it was at Morar.

Principal causes of mortality.

XVII. Principal causes of mortality.—

Cholera 2; pneumonia 1;	total	3	at regimental head-quarters.
Phthisis pulmonalis		1	on leave.
Total	...	4	

In 1874 there were 9 casualities, thus showing a diminution of over 50 per cent. in comparison with the past year.

Epidemics.

XVIII. Epidemics.—Cholera attacked the regiment on the 16th May—from that time to the 20th idem, 13 cases had occurred amongst 3 sepoys and 10 camp-followers. On the latter date the regiment marched out of cantonments to a cholera camp located at a place called Doobree, an open plain abuot 5 miles away across the river Jumna. This checked the outbreak, as no more cases broke out. But 3 more occurred with the guard left behind to protect the lines. In all there were 16 cases, 7 fatal and 9 recovered; of the former, 2 were sepoys and 5 camp-followers; of the latter, 3 were sepoys and 6 camp-followers.

Vaccination.

XIX. Vaccination.—Eighteen recruits were vaccinated, of which 7 were successful, 5 doubtful, and 6 failures. Thirty-five children belonging to the sepoys and camp-followers were operated on with success in all cases. Out of 82 recruits admitted into the regiment during the past year, the greater number had small-pox, and there were only 18 as already noted who had not had the disease or had not been vaccinated.

Inspection.

This regiment was inspected by the Deputy Surgeon-General of the Allahabad Circle on the 8th February 1876. Dr. Walker reports that the sanitary condition of the lines, comprising the huts, water-supply, hospital and its out-offices, conservancy, latrines and bazaar, was generally satisfactory; he made an inspection of all the men off duty and found them in excellent condition, and considered that the recruits had been judiciously selected. All the hospital arrangements were generally complete and comfortable, and the sick were well attended to.

Allahabad lock hospital.

Allahabad lock-hospital.—The Allahabad lock hospital, graded as 1st class, was inspected by the Deputy Surgeon-General of the Allahabad Circle on the 7th February 1876.

Medical charge.

Surgeon-Major W. Ashton, M.B., Army Medical Department and Staff Surgeon at Allahabad, had been in charge of this institution since the 25th August 1875.

Dr. J. P. Walker remarks that "it is satisfactory to notice that the number of registered women had increased from 115 in 1874 to 137 in 1875, as in a large place like Allahabad there must be nearly three hundred women practising prostitution, of whom not half coming under inspection, greatly reduces the efficiency of the lock hospital officer's exertions to incapacitate the diseased from spreading venereal disease."

Statistics.

The average strength of registered prostitutes during 1875 was 138, and from this strength there was a daily average number of sick in hospital of 23, or at the rate of 16·66 per cent. of mean strength.

The average strength of the European garrison was 1,053 and the rate of admissions from primary venereal diseases on this strength was 24 per cent. Regarding this high rate of admissions from venereal diseases, Dr. Walker writes as follows: "The percentage of admissions to strength amongst the European troops during the year 1875 was less by nearly four per cent. than during the previous year, but so long as nearly every fourth man is affected during a year with some form of primary venereal disease, the benefit of the lock hospital system is not very apparent. So long as half the prostitutes of the place are not under inspection, and the soldiers consort as freely with the unregistered as with the registered, it is simply impossible for the lock hospital arrangement, however efficiently conducted, to prevent men becoming diseased by women who are uninspected."

Digitized by Google

2nd Regiment Native (Light) Infantry, Dinapore.

I. Medical Officers.—Surgeon A. B. Seaman from 1st January to 15th April. Surgeon W. H. Jameson, Royal Artillery, and Surgeon Horace Yeld from 15th April to 7th May. Surgeon W. E. Griffith from 7th May to 15th October. Surgeon A. B. Seaman from 15th October until the end of the year. The last named officer supplies the sanitary report. Medical Officers.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Jalpaiguri, Feb. 1870 ...	68·5	1·8	4·3
1871 ...	Ditto, ditto ...	108	1·7	4·3
1872 ...	Dinapore, March 1872:..	91·7	2·4	2·8
1873 ...	Ditto, ditto ...	54·7	·4	2·2
1874 ...	Ditto, ditto ...	75·9	·5	3·4
	Average	79·7	1·3	3·4
1875 ...	Dinapore	64·38	·20	2·90

II. Location and movements.—The entire regiment was stationed at Dinapore until the 20th October, when three companies left by rail for Fyzabad in course of relief. The head-quarters and remaining five companies marched to Benares *en route* for Fyzabad on the 10th December. They remained at Benares for a few days during the visit of the Prince of Wales to that city, and continuing the march on the 8th January arrived at their destination on the 19th January 1876. Nothing particularly noteworthy occurred on the march, and there was throughout a satisfactory immunity from serious sickness. No great inconvenience was experienced, and the commissariat arrangements at the different encamping grounds were on the whole good. The articles of diet were frequently examined and were generally found to be pure and wholesome. A sufficient supply of straw for bedding was always provided and the sepoys' tents were thoroughly good and sound. The sick were carried comfortably enough on mattrasses in country carts, and their discomforts were reduced to a minimum. The hospital carts and tents always came up quickly; often, indeed, keeping up with the regiment, and only on one occasion, namely, on crossing the Sone river at Koelwar, was difficulty or delay experienced. To the men the march was a source of enjoyment rather than not. The regiment is composed almost entirely of high-caste Hindoos, and the march, in taking them for a few days to the city of Benares and then on to Fyzabad near the sacred Adjoodya, became a pleasure rather than a trouble. Location and movements. Commissariat arrangements.

IV. Meteorology.—The year 1874 at Dinapore was not characterised by any unusual feature except that the rains began much earlier than usual. The hot season was not a very severe one and it rained for five or six days during the month of May. The rains, as is generally the case in Dinapore, were protracted; they lasted off and on from the 3rd of May to the 25th of September, and nearly three inches of rain fell so early as May. Altogether, nearly forty inches of rain fell during the year, almost exactly the same as the rainfall of the previous year. Meteorology.

V. Lines, barracks or huts.—The lines are reported on as having been well looked after as to their general neatness and sanitary condition. The huts, as mentioned in last year's report (although they will compare favorably with those of other native regiments) are too small. Lines, barracks or huts.

VI. Drainage.—The drainage of the lines is said to be satisfactory, but that of the station generally is imperfect and inefficient, as, when the river rises, the drains and water-courses are choked by the back-water. By this means in 1874 the station was literally swamped, but in 1875 there was much less inconvenience. The medical officer adds that, situated as Dinapore is, it is almost impossible to solve the drainage difficulty which invariably occurs at the height of the rains. Drainage.

VII. Latrines.—The "trench system" of latrine is still in use, and is reported to have worked successfully except during the rains, at which time it always fails in Dinapore owing to the want of dry ground on which to erect the latrines. The trench latrines cannot on this account be then used, and the men have to go long distances into the surrounding country. The "dry-earth" system has been carefully carried out in the hospital latrine, and the medical officer reports that on the occasions of his inspections, he found it clean and free from any unpleasant odour. Latrines.

The water-supply is said to be abundant, but the quality of the fluid varies, as in some wells it is found to be perfectly sweet and good, whilst in others it is more or less brackish and can only be used for washing purposes. The water on analysis was found to contain an excess of sulphates and a good deal of lime. The sepoys occasionally used the river water, which was considered to be fairly pure and wholesome and was softer than that of the wells. Water-supply. Analysis.

Digitized by Google

Diet.

IX. Diet.—The medical officer regularly inspected the various articles of diet and found them to be good, and no case of underfeeding came under his observation, although he closely watched the men. Dinapore is noted for its vegetables, and the men were consequently able to procure an abundant supply of them; not a case of scurvy came under observation during the year.

Clothing.

X. Clothing.—Every sepoy over two years' service has the following garments in addition to his undress Hindustani clothing: one thick and strong great coat, two red cloth tunics, *i.e.*, a new one every second year, two blue serge pantaloons, a new pair every second year, three white tunics for hot weather wear. Three white pantaloons, three pairs white gaiters, two pairs of shoes and a cap. The Government gives nothing but the red cloth tunics and blue pantaloons renewed every two years, and it would be a great thing for the sepoy if further concessions in the matter of clothing could be made. As things are, he is often placed under serious stoppages of pay for a considerable period to pay for a great coat or suits of summer clothing, and his already small pay is thus reduced to a very low figure. The free issue of a few pairs of stout socks annually would do much to prevent admissions into hospital from blistered feet, and thus obviate a good deal of "loss of service" from this cause.

The clothing of the regiment is on the whole in a satisfactary state, but I sometimes observe that the amount of bedding a sepoy has is insufficient. Each man is obliged to have one dhurrie, and one rezai or blanket, * but these are often so thin and worn as to be an inadequate protection in the cold months. A good many cases of rheumatism occurred during the march from Dinapore, attributable, I fear, in a great measure to this cause. Under existing circumstances, the recruit especially can hardly afford to purchase sufficient bedding for the winter months. There is, however, no excuse for the sepoy who has some years' service, and in these cases when I have noticed any deficiency in his bedding, I have always taken steps to have it supplied.

Rheumatism.

* The Officer Commanding the regiment made the following remark on the sanitary report with reference to the badness of the men's rezaies or blankets, *viz.*, "steps will be taken this year to procure for each man a serviceable blanket of regimental pattern."

Blistered feet.

The shoe difficulty still remains to be solved; 26 cases of blistered feet were admitted into hospital for treatment during the year under review, and during the march there was some footsoreness; as the stiff, hard and unyielding old shoes become worn out, a new and better classed shoe altogether, described in last year's report, is being introduced. I am afraid, however, that without socks there will always be a good many cases of footsore every year.

Marches and service.

XIII. Marches and service.—The recent march from Dinapore to Fyzabad occupied twenty-six days of actual marching and, with halts at Benares and other places, lasted from the 16th December until the 19th January. The journey was accomplished without any particular discomfort, and with the exception of a few additional cases of rheumatism and footsoreness, there was no increase of sickness; the weather was good throughout, and there was no rain. The encamping grounds were sometimes small and cramped, and in one or two instances had been cultivated, but no great inconvenience was experienced. The water-supply, generally speaking, was pure and wholesome, but in one or two instances the well water had deteriorated from surface impurities. The regiment was originally ordered to proceed to the camp of exercise at Delhi, and subsequently to quarters at Agra in the course of relief; these orders were, however, countermanded and the regiment was ordered to relieve the 8th Native Infantry at Fyzabad, remaining at Benares for duty during the visit of the Prince of Wales. On several occasions the regiment furnished guards of honor for his Royal Highness.

Hospital.

XIV. Hospital.—I described the hospital in my report for 1874, and I reported that the iron cots with ribbed iron bottoms that were then in use were ill adapted for the sick sepoy. Representations were made on this point to the divisional authorities, with the result that the iron cots were removed and were superseded by comfortable charpoys with stout tape bottoms.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment:—

Present	...	...	...	...	630·6
Absent	...	...	...	...	76·0
			Total	...	706·6

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Dinapore and on march to Fyzabad...	1st Jan. 1875	31st Dec. 1875	587·7	381	1	17·5	64·8	·17	2·9
Detachment at Fyzabad ...	22nd Oct. 1875	Ditto	228	25	...	3·3	56	...	1·4
Total ...			630·6	406	1	18·8	64·38	·16	2·90

Number of deaths in hospital 1; out of hospital 1; total 2; per cent. of total strength			...	·2
" invalided ...	...	14; "	"	...	1·9
" sent on sick leave	...	7; "	"	...	·9
" of days spent in hospital 6679; per admission 16·4; per man of total strength			...	9·4
" " on sick leave 1084; per man 147·7; "			"	...	1·4
Total temporary loss of service per man of total strength				...	10·8

Digitized by Google

XVI. Principal causes of sickness.—The regiment has been healthier in 1875 than it was during the previous year. The total admissions into hospital have been 406 against 465 for 1874, while the daily average number of sick has been 18·3 against 22·33 for 1874. Altogether the regiment has enjoyed a good degree of health. The greatest number of admissions into hospital was caused by intermittent fever which was responsible for 129 cases. Dysentery and diarrhœa caused 74 admissions, a marked increase on the figures of last year for which I am unable to discover an explanation. Rheumatism and lumbago caused 27 cases, blistered feet 26, ophthalmia 20, respiratory diseases 13, boils 18, contusions 15, abscesses 9. Principal causes of sickness. Fever.

XVII. Principal causes of mortality.—Only one death occurred in hospital and one without; the first was caused by diarrhœa; in the second case the sepoy was on sick leave and died from general debility at the age of 46 years. Principal causes of mortality.

XVIII. Epidemics.—There was no epidemic during the year. In the month of November five cases of chicken-pox occurred. Strict precautionary measures were immediately enforced and rigorously carried out, and the disorder did not spread as I at first anticipated. The barracks in which the cases took place were at once vacated and thoroughly disinfected by fumigation and other means. The cases themselves were detained for treatment in a large, well, ventilated building, which at Dinapore is set apart solely for the accommodation of infectious cases. Epidemics.

XIX. Vaccination.—Ten sepoys were vaccinated in 1875, and of these cases nine were successful. Care was taken to have the women and children of the regiment vaccinated. Vaccination.

This regiment arrived at Fyzabad from Dinapore on the 31st December 1875, and was inspected by the Deputy Surgeon-General of the Lucknow Circle on the 10th of February 1876. On the date of his inspection there were 18 unimportant cases in hospital, or at the rate of 2·54 per cent. on the strength present of the regiment. Dr. Cannon inspected 28 recruits, but did not consider them of good physique. All the hospital and dispensary details were in a good state of efficiency, and the hospital assistants were well reported on by the officer in medical charge of the regiment. The Deputy Surgeon-General reports that he was satisfied with his inspection. Inspection. Recruits.

2nd Regiment, Bengal Cavalry, Segowlie.

I. Medical Officers.—Surgeon W. F. Murray held medical charge of the corps from 1st January to 20th March. Surgeon F. R. Swaine from 31st March to 19th November. Surgeon-Major F. Parsons from that date to 31st December, and he has written the sanitary report of the regiment. Medical officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Bareilly, Feb. 1870 ...	108·3	·44	4
1871 ...	Ditto, ditto ...	48·3	1·32	2·35
1872 ...	Ditto, ditto ...	66	·87	3·16
1873 ...	Ditto. ditto ...	66·1	·23	2·63
1874 ...	Fyzabad, Mar. 1874 ...	85·5	·60	3·20
	Average	74·8	·69	3·07
1875 ...	Segowlie, Feby. 1875 ...	64·40	·21	2·64

II. Location and movements.— This regiment marched from Fyzabad on the 15th January and arrived at Segowlie on the 9th February. Detachments have been stationed at Goruckpore (1 troop), Benares 16 men; Dinapore 14. On the 1st November, a squadron marched for Barrackpore, and the Benares and Dinapore detachments rejoined head-quarters. On the 16th December a squadron was temporarily sent to Benares. Location and movements. Detachments.

III. Topography and physical geography of surrounding country and station.—Having but lately arrived at this station, my report on the country and some other points will necessarily be brief. The character of the surrounding country is flat, closely cultivated and rather scarcely wooded, the soil is of a loamy kind and fertile, the principal crops being rice in the rainy season, and the cereals and different kinds of pulses in the cold. It is a well-known district for indigo and the opium poppy. The elevation of this part is about 250 feet This station is small and situated on the right bank of the river Seeranu in the district of Chumparun about 20 miles from the Nepal frontier. It is completely surrounded by a bund from 5 to 10 feet high, for during the rains the vicinity is flooded. Topography and physical geography.

IV. Meteorology and climate.—The climate is more equable throughout the year than at stations further north and west, it is also rather damp with heavy fogs in the mornings in the cold season. Meteorology and climate.

V. Lines, barracks or huts.—The lines previously occupied by the 4th Bengal Cavalry are at the east end of the station running north and south, and consist of 8½ rows of huts 56 yards apart, allowing free ventilation and space for the double row of horse lines between; the huts are built of bamboo and grass thickly coated with dry clay, the roofs are tiled, each hut occupied by two men has 270 square feet with cubic space of 2,430 feet. Lines, barracks or huts.

Digitized by Google

Drainage. *VI. Drainage.*—The drainage of the station generally is efficient, or not according to the rainfall. Should it be heavy, the sluice gates, of which there are several on the north and east sides of the bund, cannot be opened to let water off from floods, being as high, or higher, outside, but if rains are moderate and floods are not reaching the bund, the gates are opened with advantage. These remarks hold good with reference to the drainage of the lines, the channels for which are well placed and in good order.

Conservancy and latrines. *VI. Conservancy and latrines.*—The trench system is in use, and works well except during the rains, as at this season the ground outside the bund, on which the latrine is placed, is either under water, or is completely saturated with it, and then the men must resort to fields which are at some distance from the lines.

Water-supply. The water is of good quality and abundant, it is obtained from "pucca" wells, and it is said that the continued use of it will produce *goitre*.

Bazar supplies. The regimental bazar had been well supplied with the various articles of food which were of good quality and were to be had at a moderate price. No cases of underfeeding were observed during the year. Vegetables were procurable.

Clothing. The clothing is suited for the seasons and for the duties the men have to perform.

Duties. The duties have been light or moderate, and the men had an average of eight nights in bed.

Hospital. *XIV. Hospital.*—The hospital is a pucca building situated about 80 yards west of the lines in a fine tope of trees and affords ample accommodation for 26 cots. It consists of one large ward 72 feet long, 22 feet broad and 18 feet high, with cubic space of 35,638 feet and 1,584 superficial area. At one end there are two small rooms, one used as an office, the other as a dispensary; and at the other end a small ward 20 feet by 12 feet and 16 feet high, with a cubic space of 3,480 feet that is available for any case requiring separation. The verandah of the building on each side is 12½ feet broad and the floor is 4 feet from the ground. There is a covered way to the bath-room and latrine which adjoins one corner of the building. The ventilation is very free by ridge, roof, and doorways. The bedding of the men is ample and

Cook-house. usually composed of durries, blankets and quilted coverlets. There is a cook-house near to the hospital, which is divided into two compartments, one for Hindoos the other for Mussulmans; it is not much used. There are quarters for six servants, but none for the hospital assistants. The hospital well is pucca, similar to those in the lines.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	...	...	...	...	413·16
Absent	...	...	...	...	45·16
			Total	...	458·32

Station.	Period. From	Period. To.	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Segowlie and Fyzabad.	1st Jan. 1875	31st Dec. 1875	266	196	...	8·48	73·68	..	3·18
Detachment, Gorukhpore ...	Ditto	Ditto	50	18	...	·56	36	...	1·12
Ditto, Benares ...	Ditto	12th Nov. 1875	16	1	...	·6	7·21	...	3·75
Ditto, Barrackpore ...	Ditto	31st Dec. 1875	137	27	...	3·90	118·20	...	2·85
Ditto, Segowlie ...	Ditto	8th Feb. 1875	134·66	21	...	5·18	125·03	...	3·84
Ditto, Benares ...	16th Dec. 1875	31st Dec. 1875	100	3	...	1·56	68·44	...	1·56
Total ...	...	...	413	266	...	10·94	64·40	...	2·64

Number of deaths in hospital 0; out of hospital 1; total 1;			per cent. of total strength	...	·21
„ invalided 16;			„ „	...	3·49
„ sent on sick leave 5;			„ „	...	1·09
„ of days spent in hospital 3,852;	per admission 14·48;		per man of total strength	...	8·40
„ „ on sick leave 793;	per man 158·6;		„ „	...	1·73
			Total temporary loss of service per man of total strength	...	10·13

Sickness. *XVI. Principal causes of sickness.*—Of the 266 cases admitted into hospital during the year, 69 were from injuries connected more or less directly with duties of a cavalry soldier; these included three cases of fracture, two of which were compound, 72 were cases of fever, mostly

Digitized by Google

of intermittent type; next in order of frequency come bowel complaints, chiefly dysentery and diarrhœa. Of the other causes of sickness nothing is noteworthy. The number admitted for 1874 was 327; for 1873, 256.

XVII. Principal causes of mortality.—There was one death only during the year on Command at Dinapore, cause unknown. Mortality.

XXI. Special observations.—The general health of the regiment has been very satisfactory throughout the year, particularly so when it is considered how much it has been split up into detachments. The percentage of such has been low, and only one case of death occurred in the year; this was at Dinapore, where there was a Command of 14 men, and from which no returns were received. The very few cases of venereal diseases (4) is worthy of remark, and is probably due to a great extent to a number of men being allowed to keep their wives in the lines. The health of the camp-followers has been good also during the year. Special observations. Venereal disease.

The Deputy Surgeon-General of the Allahabad Circle inspected the lines and hospital of this regiment on the 13th March 1876. On that date there were six patients in hospital who were suffering from trivial ailments, and the arrangements for the care and treatment of the sick were considered to be satisfactory. Dr. Walker directed the attention of the medical officer to the deficiency of some articles of bath-room furniture. The state of the hospital building was satisfactory, as was also that of the out-offices. Inspection. Hospital.

The 1st class hospital assistant had performed his duties satisfactorily during the year, and the native medical pupil had made very fair progress in all the branches of precollegiate professional study, and had, in Dr. Walker's opinion, done credit to the teaching of the 1st class hospital assistant above mentioned, *viz.*, Shaikh Mahomed Hossain.

13th (The Shekhawattee) Regiment Native Infantry—Benares.

I. Medical Officers.—Surgeon-Major Albert M. Verchere (by whom the annual report has been submitted) was in medical charge throughout the year. Medical Officers.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Barrackpore, December 1869	120	2·9	5·3
1871 ...	Fort William, Mar. 1871	158	4·3	6·3
1872 ...	Benares November 1872	174·4	4·3	6·7
1873 ...	Ditto ditto	73.5	2·2	4·3
1874 ...	Ditto ditto	94·4	1·7	6·7
	Average	124·1	3·1	6
1875	Benares	103·19	1·56	5·36

A detachment at Chunar was during the whole year in the medical charge of the Garrison Surgeon, Fort Chunar. A detachment at Berhampore was in the medical charge of Surgeon-Major Shircore, Civil Surgeon of Berhampore, the whole year. Detachment. Detachment.

II. Location and movements.—Head-quarters at Benares the whole year. Detachment at Chunar, 70 strong, the whole year; relieved monthly. Detachment at Berhampore, 169 strong, the whole year; no relief. Location and movements.

VI. Meteorology and climate.—The year 1875 was a year of moderate heat at Benares, with an amount of rain in excess of the average for the locality, but not so excessive as in 1874; 1872 and 1873 were years of moderate rains, and that 1874 and 1875 were years of abundant rain: the first two mentioned years were very dry, hot and harassing; the last two years were moist, mild, and very tolerable, being at the same time very healthy. Meteorology and climate.

Men for the detachment at Chunar are selected and changed monthly.—At Chunar, where the climate is very nearly the same as at Benares, the daily average number of sick was only 2·78 per cent. of strength and the deaths 1·42. But at Berhampore, in a detachment of 169 men of all ranks, there were no less than 306 admissions and the daily average number of sick for the year is 8·17 per cent. of strength and the deaths 2·35. The climate of Berhampore appears to have been very detrimental to health. I have no meteorological returns for Berhampore. Men for the detachment at Chunar are selected and changed monthly.

V. Lines, barracks and huts.—See report for 1872. No change. State of repair satisfactory. No overcrowding. Lines, barracks and huts.

VI. Drainage.—Satisfactory. See previous report. No change in 1875. Drainage.

Digitized by Google

Conservancy and latrines.

VII. Conservancy and latrines.—Satisfactory as far as it goes. The conservancy is the same as reported in 1873. The latrines are on the trench system and answer well; there are 4 screens for men and two for women and children, each screen with 4 seats. It is obvious that with only 16 seats for men, the accommodation is insufficient, especially when the men have to hurry on in the morning to be ready for parade; there is therefore much defiling of the ground just outside cantonment boundary. The cantonment committee has unfortunately no funds to increase the latrine accommodation.

Water-supply.

VIII. Water-supply.—Good, from wells. See previous reports for 1872-73.

Diet.

IX. Diet.—Same as reported in 1873 and 1874. The men have always appeared well fed. The regimental mills are in operation as heretofore. There has been no symptoms of "Scurvy" in the regiment, and I could trace no case of disease to under-feeding. The physique of the men was very good when Dr. J. P. Walker, Deputy Surgeon General, Allahabad Circle, inspected the regiment in the beginning of 1876, and Colonel King, commanding the Regiment, who returned from furlough in Europe at the end of 1875, expressed his opinion that the men looked in a very good condition, strong and healthy.

Physique.

Clothing.

X. Clothing.—See report for 1872. No change. The clothing was very good and quite suitable to seasons and duties; but the boots, as usual, caused much inconvenience. The men were not admitted into hospital when foot-sore, but treated while remaining on duty, being allowed to wear native shoes for a few days. It is to be regretted that a pattern of boots cannot be devised which should look neat and soldier-like, and at the same time not cause so much rubbing at the ankles and toes.

Duty and employment.

XI. Duty and employment.—The guard duty has been ordinary and the nights in bed have been good all through the year. I feel quite satisfied that the small amount of night duty at Benares and the enormous amount of it in Calcutta have as much as the climate to answer for the favorable state of health at Benares and the unfavorable one in Calcutta. The average number of continuous nights in bed at Benares, for the whole year 1875, was 5·97. This figure is very good, as it is very nearly only one night on duty during each week. The number of parades a week was 9, and the average duration of parades one hour. The duty was not excessive and did not prove prejudicial to the health of the men.

Parades.

Exercise, amusements, &c.

XII. Exercise, amusements, and occupations.—There is no gambling and but little shooting; but gymnastics are superintended by the Adjutant, and are much liked by a portion of the men. Recruits appear to benefit greatly by gymnastic exercises.

Marches and service.

XIII. Marches and service.—No service. The only marches were those made by the detachment at Chunar, on monthly reliefs. Those marches caused no sickness.

Hospital.

XIV. Hospital.—See previous reports. The old hospital (which is bad and insufficient) has been in use all through the year. The new hospital is in course of construction; it is on the standard plan and well advanced towards completion, and it promises to be all which could be desired. During 1875 overcrowding was always prevented by the use of tents.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—The greater number of admissions in 1874 and 1875 were in the detachments. The following tabular statement gives all the information desirable on the sickness and mortality in the bodies of men at head-quarters and in the detachments:

Strength:—

Present	...	...	...	...	639·61
Absent	...	...	...	...	61·66
			Total	...	701·27

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admission.	Deaths.	Daily average sick.
Head-quarters at Benares	1st January ...	31st December...	399·64	275	1	18·11	68·81	·25	4·61
Detachment at Chunar...	Ditto ...	Ditto ...	70·33	79	1	1·96	112·32	1·42	2·78
Ditto at Berhampore.	Ditto ..	Ditto ...	169·69	306	4	13·87	180·37	2·35	8·17
Total ...	.....	... ...	639·61	660	6	34·28	103·19	·94	5·36

Number of deaths in hospital 6; out of hospital 5; total 11; per cent. of total strentgth				...	1·56
„ invalided	32;	„	„	...	4·53
„ sent on sick leave	15;	„	„	...	2·13
„ of days spent in hospital 12,575; per admission 19·05; per man of total strength				...	17·93
„ „ on sick leave 2,080; per man ... 138·6;		„	„	...	2·96
Total temporary loss of service per man of total strength				...	20·89

Digitized by Google

XVI. Principal causes of sickness.—The principal cause of sickness was, as usual in India, ague, which produced 332 admissions. But ague is not a very prevalent disease at Benares; the detachment at Berhampore suffered severely from it. The returns of ague are— Principal causes of sickness.

		Total.
At Benares	74	332
„ Chunar	32	
„ Berhampore	226	

Dysentery produced 45 admissions, and diarrhœa 8. There was only one case of cholera; it occurred at Chunar and was fatal.

I am glad to be able to report a very great improvement in the admissions from venereal diseases. The number of admissions is still great for native troops, but the improvement on 1874 is highly satisfactory, as the following figures show :— Venereal disease.

	1874.	1875.
Primary Syphilis	67	45
Secondary Syphilis	37	22
Gonorrhœa	48	24
Phymosis	1	...
Bubo	6	3
Epididymitis	1	4
Stricture of Urethra	1	...
Orchitis	5	4
Total	166	102

But the improvement, although satisfactory, is not sufficient, as in 1873 we had only a total of 84 cases, and when the regiment was at Barrackpore and Calcutta, we had only 47 and 45 cases of venereal, respectively. The great cause of the disease is the proximity of the city of Benares to cantonment, and the enormous amount of prostitution which flourishes there without any control or examination of any kind. I need not enter into the remarks I made in last year's report. The civil authorities will not consent to any scheme of protection, however modified, being extended to the city of Benares; neither will they allow the musketry camp at Bunoca to be enclosed in the lock-hospital area. The lock-hospital area has a boundary, which on the city side is within a mile of cantonments. I have explained in my reports on the working of the lock-hospital that it is hopeless to expect satisfactory results in either "white" or "black" troops as long as the present insufficient rules and orders remain in force. I have placed the matter strongly before the Local Government, but it appears that there are some reasons which overrule any consideration of protection to the troops. Until a change is made in the orders directing the working of the lock-hospital in this cantonment, Benares must remain the hot-bed of veneral diseases which it has always been. Prostitution.

There are no other diseases which require any special mention here.

XV. Principal causes of mortality.—One fatal case of cholera occurred at Chunar, one fatal case of small-pox occurred at Benares; it was an isolated case, and no history of contagions could be traced. Principal causes of mortality.

Two cases died of phthisis on sick leave. Three cases of ague, with complications of remittent fever and pneumonia, died at Berhampore. Another case of chronic ague was sent on sick leave from Berhampore and died while on leave. A case of dysentery died at Berhampore. A case of peritonitis died at Katmandoo in the person of a Goorkha on furlough. One man died of an unknown cause while on furlough in Patiala.

There were in all 11 deaths, and they are distributed as follows :—

Head-quarters, Benares	1
Detachment, Chunar	1
Detachment, Berhampore	4
Sick leave from Benares	2
„ Chunar	0
„ Berhampore	1
On furlough or temporary leave	2
Total	11

XIX. Vaccination.—Thirty-nine recruits and young sepoys were vaccinated in 1875. All the children of sepoys and camp-followers were also vaccinated. I consider the regiment well protected by vaccination. Vaccination.

XX. The Deputy Surgeon-General of the Allahabad Circle made his medical inspection of this regiment on the 2nd, 3rd, 4th and 11th January 1876. On the first two days the inspection was in the lines at Benares, and on the last two days in cholera camp at Raharria, four miles away on the Allahabad road. The general sanitary condition of the lines, including the water-supply and conservancy, was good, and the men had not been at all overcrowded. The latrines were on the movable trench system and well managed, but they were Inspection. Latrines.

Digitized by Google

too small for the requirements of the regiment, and consequently the men had to resort to the fields outside the lines. This defect in the latrines is owing to the cantonment funds which will not admit of a larger supply of screens.

Hospital. A new hospital on the standard plan is in course of construction, and is much needed, as the present buildings can only afford very inferior accommodation for 26 patients. The servants' houses at the hospital were not in a satisfactory condition, as they were not in the list of buildings to be kept in repair by the Department Public Works.

Physique. The physique and general health of the men were excellent, and the recruits appeared to have been judiciously selected. On the occasion of Dr. Walker's Cholera first inspection, there were two cases of cholera under treatment, and the entire regiment was ordered out into camp in consequence. All the hospital details for the care and treatment of the sick were in good working order.

Detachment, 13th Regiment Native Infantry, at Berhampore. *Detachment, 13th Regiment Native Infantry, at Berhampore.*—The Deputy Surgeon-General of the Presidency Circle made his inspection of this detachment on the 18th February 1876. The head-quarters of the regiment was at Benares, and this detachment, of an average strength of 144 men, was stationed Hospital. at Berhampore througout the year. The hospital, one of the old European infantry barracks, is described as being very conveniently situated for the lines, and affords very good accommodation for the sick. All the men off duty were inspected, and Mr. Cockburn reports that he found them in fairly good health and condition.

Lock Hospital, Benares. *Lock Hospital, Benares.*—The lock-hospital for Benares Cantonment was inspected by Deputy Surgeon-General J. P. Walker, M. D., on the 11th January 1876. Dr. Walker reports that the building and all sanitary arrangements were in a satisfactory condition.

Medical charge. Surgeon-Major A. M. Verchere of the 13th Regiment Bengal Infantry had been in charge of the lock-hospital since 1873, but on the day of the Deputy Surgeon-General's inspection was absent with his regiment in cholera camp, and on this occasion Surgeon-Major G. Whitla was acting for him.

Examination. The examination of the prostitutes was held twice a month by the medical officer, but certain women (as explained by him) were subjected to weekly examinations. It is stated that very few of the women absent themselves from the examinations; 3 per cent. being the average number of absentees. The hospital was clean and tidy, and all the details for the proper treatment of the patients were satisfactory. There was an average of 97 women borne on the register during the year, and a daily average number in hospital of 17·10, or at the rate of 17 per cent. of average strength.

Venereal disease. Amongst the European troops there were admissions from venereal diseases at the rate of 34 per cent. of mean strength, and Dr. Walker remarks that it is very doubtful whether this percentage would have been exceeded if there had been no lock-hospital in the station; but he adds that these unsatisfactory results do not arise from any want of proper supervision on the part of the medical officer in charge, who has tried to improve them to the utmost of his power.

Recommendations. The medical officer made the following recommendations to the cantonment committee in his annual report for 1875: 1st, an increase of the lock-hospital special police; 2nd, an extension of the lock-hospital area to the artillery and musketry practice camps at Sultanpore and Hurrowa, while troops are out there; and 3rd, a system of modified registration for the city and suburbs of Benares. The Cantonment Committee recommended the adoption of the first and second suggestions, but could not agree regarding the proposals in the third.

Station Staff Dispensary at Benares. *Station Staff Dispensary at Benares.*—This dispensary was inspected by the Deputy Surgeon-General of the Allahabad Circle on the 11th January 1876. Surgeon-Major A. M. Verchere was Staff Surgeon during the entire year of 1875, but as he had to go with his regiment into cholera camp, he was not present on the date of Dr. Walker's inspection. Surgeon-Major G. Whitla, of the Army Medical Department, officiated as Staff Surgeon during Mr. Verchere's absence. The Deputy Surgeon-General found all the arrangements for dispensing medicines in this dispensary in good working order, and the hospital assistant was well reported on.

Medical charge.

Digitized by Google

Detachments of 2nd and 18th Regiments Bengal Cavalry, Benares.— Dr. J. P. Walker, Deputy Surgeon-General of the Allahabad Circle, inspected the detachments of the 2nd and 18th Regiments of Bengal Cavalry on the 3rd January 1876. The detachments were under canvas, and were reported on as being in a very satisfactory condition in every way. On ordinary occasions the cavalry detachment at Benares is of a strength of from 10 to 16 men, but on the occasion of the visit of His Royal Highness the Prince of Wales, there were 127 men of the 2nd Bengal Cavalry and 30 men of the 18th Bengal Cavalry on duty there. These detachments were under the charge of Surgeon-Major Verchere, 13th Regiment Bengal Infantry, during the year under review, and there was but one case of sickness from amongst them which was treated in the hospital of the 13th Bengal Infantry. Detachments of 2nd and 18th Regiments, Bengal Cavalry, Benares. Medical charge.

European Invalid Battalion at Chunar.—The Deputy Surgeon-General of the Allahabad Circle made his inspection of the European invalid battalion at Chunar on the 31st January 1876. During the floods of 1875, the water reached above the floor level in every house in the lower lines, and the main barrack was about two feet under water for some days. The inmates of the uninhabitable quarters were accommodated in the Fort from the 3rd of August to the 6th of September. European Invalid Battalion at Chunar.

The composition of the European invalid battalion and garrison staff on the day of inspection was as follows, *viz.*, 3 commissioned officers, 1 magazine sergeant, 1 head warder of state prison, 1 commissariat sergeant, 1 assistant warder, and 16 non-commissioned officers of the invalid battalion; a detachment of the 1st battalion, 5th Fusiliers consisting of two officers and 77 non-commissioned officers and men, was on duty at Chunar, and the sick from it were treated in the hospital with those of the invalid battalion. The hospital affords ample accommodation for the sick, and was, as was also everything connected with it, in a very satisfactory condition. The daily average strength of the invalid battalion during the year 1875 was 21, with an average daily number of sick of 48, and a death rate of 5·7 per cent. of mean strength. Hospital.

1st Regiment Bengal Cavalry—Cawnpore.

I. Medical Officers who have held charge.—The following medical officers have held charge of the regiment during the year—Surgeon E. Battersby, M.B., from 1st January to 22nd February. Surgeon A. Deane, 35th Native Infantry, held it as an additional charge from 22nd February to 19th June. Surgeon E. Mair, M.B., from 19th June to 8th December. Surgeon-Major E. McKellar, M.D., from 8th December to the end of the year. The last-named officer has supplied the annual sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Morar, December 1867...	156·8	·8	5·4
1871 ...	Ditto ditto ...	152	·8	5·1
1872 ...	Cawnpore, February 1872	125·2	1·7	4·5
1873 ...	Ditto ditto ...	81·4	1·7	3·8
1874 ...	Ditto ditto ...	83·7	·8	2·8
	Average ...	119·8	1·2	4·3
1875 ...	Cawnpore	51·70	·27	·87

II. Location and movements of the regiment.—The entire regiment remained at Cawnpore from 1st January to 19th November, on which latter date it commenced its march, in course of the annual relief, towards Sialkot, and by 31st December was at Camp Ughana, two marches above Umballa. Location and movements of the regiment.

III. Topography, &c.—There appears to be nothing new to report under this head. I beg to refer to my report for the year 1873, in which a full description of the station of Cawnpore is given. Topography, &c.

XI. Duty and employment.—Duty has not been in any way excessive; number of nights in bed 12·41. Duty and employment.

Digitized by Google

Marches and service.

XIII. Marches and service.—The regiment marched from Cawnpore on the 19th November, and on 31st December had reached Ughana on its upward march towards Sialkot. Nothing worthy of record has occurred during the march. The health of the regiment has been excellent throughout. The encamping grounds along the grand trunk road have been found clean and well cared for, and the water clear and wholesome.

Hospital.

XIV. Hospital.—The hospital at Cawnpore has been fully described in previous reports, and there is nothing new now to state regarding it. Jhamps were still unsupplied up to the time of the regiment leaving the station.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment :—

Present	...	...	...	...	359·76
Absent	...	...	...	...	96·14
			Total	...	455·90

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Cawnpore and on march ...	1st January ...	31st December...	359·76	186	1	6·89	51·70	·27	1·91

Number of deaths in hospital 1; out of hospital 3; total	4; per cent. of total strength	...	·87
„ invalided	6; „ „	...	1·31
„ sent on sick leave	4; „ „	...	·87
„ of days spent in hospital 2,516; per admission,	13·52; per man of total strength	...	5·51
„ „ on sick leave 180; per man,	45; „ „	...	·39
Total temporary loss of service per man of total strength		...	5·90

Principal causes of sickness.

XVI. Principal causes of sickness.—The healthiness of the regiment during the past year is shown by the figures in the preceding paragraph. In all there were only 186 admissions into hospital out of a strength present of 359·76, or at the rate of 51·70 per cent. for the entire year. Of these admissions, 71 were due to fevers and 49 to accidents. In the preceding year the figures were 159 and 57, respectively. The progressive improvement in the health of this regiment from year to year during its stay at Cawnpore may be seen in the following comparison of the number of admissions, and the daily average of sick during each of the 4 years. :—

	1872.	1873.	1874.	1875.
Average strength present ...	406·47	390·64	372·73	359·76
Number of admissions ...	509	318	312	186
Average daily sick ...	18·49	15·28	10·76	6·89

There were 4 deaths during the year.

Principal causes of mortality.

XVII. Principal causes of mortality.—As was the case last report, 1 man only died in regimental hospital, and 2 men died on sick leave. The causes of death in these cases were acute nephritis and congestion of liver, respectively; 1 man also died when on temporary leave from, as stated, bronchitis.

Epidemics.

XVIII. Epidemics.—None, so far as this regiment is concerned. There was no case either of cholera or small-pox among either men or camp-followers during the year, though, as I am informed, a few cases of cholera occurred in the 35th Native Infantry and among the European troops in the station, and the disease was reported to exist for a time in the city and sudder bazar.

Vaccination.

XIX. Vaccination.—None, the regiment being fully protected.

Recommendations.

XX. Recommendations.—No special recommendations appear to have been made during the year.

Inspection.

The Deputy Surgeon-General of the Lahore Circle made his medical inspection of this regiment on the 12th April 1876. The regiment arrived at Sialkot on the 1st February in relief of the 17th Bengal Cavalry, and occupied the lines of this latter regiment. Dr. Ray reports that the conservancy arrangements, the water-supply, &c., were all good; there were no complaints made to him, and he had no recommendations to make.

Digitized by Google

35th (The Mynpoorie) Regiment, Native Infantry—Cawnpore.

I. Medical Officers.—Surgeon A. Deane held medical charge of the regiment from the beginning of the year until the 12th December. From that date until the end of the year, Surgeon Edward Mair was in charge, and he has submitted the annual sanitary report. Medical Officers.

Year.	Station.	Per cent of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Meean Meer, March 1869	171·2	12	6·7
1871 ...	Ditto ditto ...	124·9	4·7	4·3
1872 ...	Cawnpore, February 1872	102·4	2·6	2·7
1873 ...	Ditto ditto ...	51	1·7	2
1874 ...	Ditto ditto ...	49·9	·7	2·3
	Average ...	99·8	4·3	3·6
1875 ...	Cawnpore	42·47	·84	1·72

II. Location and movements.—The whole regiment was stationed at Cawnpore until the 14th December, when it left for Calcutta by train. It arrived in Calcutta on the 17th December, and remained encamped there till the end of the year. Location and movements.

IV. Meteorology and climate.—The hot season of 1874 is described as having been unusually severe and protracted with a corresponding short period of rains. Meteorology and climate.

V. Lines and huts.—At Cawnpore the men occupied the same lines as on the previous year. A detailed description of the lines and of everything connected with them was given by Surgeon A. Deane in his report of the regiment for 1872. The kutcha huts are roomy and kept in good repair, and no overcrowding existed at any period of the year. While at Calcutta the regiment was encamped on the *maidan*. The camp was arranged on the usual plan, and all sanitary arangements carefully attended to. Lines and huts.

VI. Drainage.—The drainage of these lines has been fully described in the report for 1872, and during 1875 no inconvenience arose from the lodging of surface water during the rains. Drainage.

VII. Conservancy and latrines.—As in former years, the latrines were on the trench system, and the whole arrangements were most satisfactory, and gave rise to no complaints. At Calcutta, latrines were provided for the use of the regiment close to Tolly's Nullah, and urinals erected in rear of the lines. A large number of sweepers were employed, and by a liberal use of McDougall's powder all nuisance was avoided. Conservancy and latrines.

VIII. Water-supply.—At Cawnpore the drinking water was obtained as formerly from pucka wells. The supply was sufficient, and the water always clear and good. At Calcutta the men obtained their water from one of the tanks on the *maidan*. For washing and bathing purposes the men, while at Cawnpore, went to the Ganges, which was about a mile distant from the lines. Water-supply.

IX. Diet.—The men continue to diet themselves as formerly. There is no ground for supposing that the practice of under-feeding prevails in the regiment, and the general excellence of the men's physique, and the extraordinary healthiness of the regiment for the last few years, show that it cannot exist to any extent. If such a thing were suspected, it could be at once checked by a reference to the baniah's books. The bazaar was frequently inspected, and its cleanliness enforced. The supplies of all kinds at Cawnpore, including vegetables, were varied and abundant, and, except on one or two occasions, excellent in quality. Diet. Bazaar.

X. Clothing.—Great attention has been paid to the clothing of the men during the last few years, and the great improvement in the health of the regiment since its arrival at Cawnpore is, no doubt, to a great extent attributable to this. All the men are compelled to have two suits of Hindustani clothing in addition to their uniform, and all the recruits are provided with rezais and dhurries. When the men's tunics are worn out, they are cut down into closely-fitting jackets, buttoned in front, and of uniform pattern. During the rains and in the cold weather, strict orders are given that men are to be in warm clothing in the morning and evening. During the last year, the men have all been supplied with shoes of a new pattern. They are low at the heel and sides, and fastened in front with a brass buckle. The men consider them an improvement, and the admissions for sore feet were fewer than in previous years. Clothing. Shoes.

XI. Duty and employment.—Under this head there is nothing calling for remark. The duty has been very moderate during the whole year. The average number of continuous nights in bed during the year has been 15·22. Duty and employment.

XII. Exercise, amusements, and occupations.—Within the lines at Cawnpore there was a small gymnasium in which some of the men practised wrestling, the use of Indian clubs, &c. All the recruits in the regiment are put through a course of simple gymnastics, lasting for about an hour daily, and conducted by a havildar, who is a trained gymnast. The course, simple as it is, has a marked effect in improving the physique of the men. Exercise, amusements, and occupations.

Digitized by Google

Marches and service.

XIII. Marches and service.—The regiment left Cawnpore on the 14th December, and arrived at Calcutta on the 17th December, travelling by special train, and halting for a few hours at Dinapore and Muddapore.

Hospital.

XIV. Hospital.—The hospital at Cawnpore has been described in former reports, and no alteration was made during the year. No overcrowding occurred at any time. At Calcutta the patients were treated for a few days in the hospital tent, and afterwards removed to one of the hospitals at Alipore.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	630·9
Absent	...	76·27
Total	...	707·17

Station.	Period. From	Period. To	Strength.	Total number of.. Admissions.	Total number of.. Deaths in hospital.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Cawnpore ...	1st Jan.	14th Dec.	629·4	245	3	10·8	40·6	·49	1·7
Ditto at Calcutta ...	17th Dec	31st Dec.	670·0	23	...	15·5	83·6		2·3
Total ...			630·9	268	3	10·9	42·47	·47	1·72

Number of deaths in hospital	3;	out of hospital, 3; total	6;	per cent. of total strength ... ·84
„ invalided	41;	„	„	... 5·79
„ sent on sick leave	3;	„	„	... ·42
„ of days spent in hospital	3,986;	per admission, 14·87;		per man of total strength ... 5·63
„ „ on sick leave	355;	per man 118·3;		„ „ ... ·50
				Total temporary loss of service per man of total strength ... 6·13

Principal causes of sickness.

XVI. Principal causes of sickness.—Ague as usual heads the list, but the number of admissions for this disease (105) are fewer than in any former year. There has been a steady diminution in the number of cases of ague during the time the regiment has been stationed at Cawnpore. Conjunctivitis gave 25 admissions. The great majority of these cases occurred in the months of April, May, June and July, and were no doubt caused by the dust, heat and glare. Under the head of abscess there were 20 admissions. Dysentery gave 17 admissions, occurring mostly during the rains and in the cold weather; and diarrhœa 15 admissions, pretty equally distributed throughout the year. There were only 5 admissions from primary syphilis, and none for gonorrhœa.

Syphilis.

Causes of mortality.

XVII. Causes of mortality.—Of the deaths within the hospital, one was from cholera, one from diarrhœa, and one from phthisis. Of the three patients who died out of hospital, the cause of death in one was pulmonary phthisis, and in the other two, ague.

Epidemics.

XVIII. Epidemics.—One slight outbreak of cholera occurred during the year. A sepoy, who had only returned a few days from leave, was attacked and died. Two women and two children, living in the regimental bazaar, were also attacked, and all of these died except one of the women. The houses were cleared out and carefully disinfected, and no fresh cases occurred. Cholera was prevailing at the time in the city and in the sudder bazaar. The first case occurred on the 21st of July, and the last on the 25th.

Station Staff Dispensary, Cawnpore.

Station Staff Dispensary, Cawnpore.—Surgeon A. Deane, 35th Regiment Bengal Infantry, was in medical charge of the brigade staff from the 1st January to the 11th December 1875, and was then succeeded by Surgeon-Major J. B. Hamilton, M. D., of the Army Medical Department.

Inspection.

The Deputy Surgeon-General of the Allahabad Circle inspected the staff dispensary on the 29th March 1876. At the time of inspection the dispensary was allowed accommodation in the hospital building of the 31st Regiment Bengal Infantry. Dr. Walker reports that the medicines and instruments were in a satisfactory condition, and were under the charge of 1st Class Hospital Assistant Sahadit Ali, of whose conduct and qualifications both Surgeon Deane and Surgeon-Major Hamilton spoke in high terms.

Digitized by Google

Lock-Hospital, Cawnpore.—This institution was inspected by the Deputy Surgeon-General of the Allahabad Circle on the 29th March 1876; he reports that the patients were clean in person, clothing and bedding. The treatment in hospital was satisfactorily carried out. The average strength of prostitutes borne on the register was 218, and the daily average number of sick was 66, or at the rate of 30·27 per cent. of mean strength. On the day of inspection there were 38 patients in hospital affected with venereal disease in the following forms, *viz.*, gonorrhœa, 9 cases; primary syphilis, 28; secondary syphilis, 1. It appears from the statistics forwarded with Dr. J. P. Walker's report, that nearly one-fourth of the registered women were constantly under treatment, and regarding the benefit derived by the European soldiers from the establishment of the lock-hospital, he remarks as follows: "It also shows that the effect of the lock-hospital arrangements as a whole had resulted in little good to the European soldier, in so far as nearly 36 per cent. of them had been in hospital during the year 1875 for primary venereal diseases."

Lock-Hospital, Cawnpore. Statistics.

The medical officer in charge of the lock-hospital considers that "the European troops in camp and cantonment should not be allowed to visit the city, except on a pass which would enable the medical officer of the corps to trace out where men contracted the disease."

Surgeon A. Deane, 35th Regiment Bengal Infantry, had been in charge of the lock-hospital from the 1st January to the 13th December, and Surgeon-Major J. B. Hamilton, M.D., of the Army Medical Department, from this latter date to the end of the year.

Medical charge.

Dinapore Lock-Hospital, 1st Class.

Inspected by Dr. Irving on the 29th February 1876.

Medical Officers.—Surgeon A. B. Seaman, 2nd Regiment Bengal Light Infantry, had been in charge from 1st January to 15th April, and from the 15th April to the 15th of December. Surgeon W. N. Jameson, Royal Artillery, was in charge during Mr. Seaman's absence on 6 months' leave, and again from 15th December to the end of the year.

Medical Officers.

A new building had been taken for the purposes of a lock-hospital, which, so far as the internal accommodation was concerned, was a great improvement on the one previously occupied; but Dr. Irving considers it to be too close to the bazaar, and to be in want of more space about it, as well as of a surrounding wall.

Building.

The average number of registered prostitutes during the year was 95; the total number treated was 233, and average number under treatment in hospital on account of venereal diseases was 15·21.

Statistics.

Among the European garrison (strength not stated) there were admitted 151 cases of gonorrhœa, and 57 of syphilis, or a total of 208; and this number was in excess of the admissions of any previous year since 1871.

Disease among the European garrison.

Dr. Irving remarks that it will ever be a most difficult matter to work the Contagious Diseases Act in Dinapore, as circumstances had come to the knowledge of the sub-committee which make it appear to be very probable that a great deal of the disease among the soldiers is contracted from women of a different class than those borne on the register.

Difficult to work the C. D. Act in Dinapore.

The hospital, so far as medicines and the few instruments in store were concerned, was well supplied with means for the proper treatment of the prostitutes.

Supply of medicines, &c.

Hazareebaugh Lock-Hospital.

Inspected on the 4th February 1876.

Dr. Irving reports as follows:—"In my opinion this is a model lock-hospital. The house is properly enclosed by high walls. Comparisons are said to be odious, but at Dinapore the lock-hospital is in the bazaar, and is not properly enclosed—nay more, when I once brought this forward at a meeting of the Cantonment Committee, and proposed that it should be so, I was told that the object was to make the hospital as agreeable as possible to the women, and

Inspection.

Digitized by Google

that they liked to be able to look out and see what was going on. At Darjeeling, where there is a lock-hospital, the diseased prostitutes are located at one end of the police hospital, which is on a hill side and is not enclosed, and the women, when it suits them, wander into the contiguous bazaar without let or hindrance."

Hospital. The hospital details were in excellent order, and everything was clean and orderly. On the day of inspection there were no patients in hospital. There were but 33 prostitutes on the register, and they furnished 72 admissions into hospital; the average strength of the European troops being 108 men. These figures, it is stated, shew greatly improved results over those of former years.

Medical charge. Dr. E. A. Birch, Civil Surgeon of Hazareebaugh, was in charge during the year. He states that, "practically, the Act is only enforced in the town and cantonment, though nominally an area of five miles is included."

GWALIOR DISTRICT

(INCLUDING THE STATIONS OF MORAR AND JHANSI).

Average daily strength present during the year	... Cavalry	365·3	Infantry 1,947·5
Average daily sick per cent. of average strength	...	3·12	3·70
Ratio of mortality per cent. of the average strength	...	·87	1·57

6th Regiment Bengal Cavalry—Morar.

Medical Officer. *I. Medical Officer.*—Surgeon-Major G. Barnard has been in medical charge of the regiment throughout the year, and the following information has been extracted from his annual Sanitary Report.

Years.	Stations.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Cawnpore, December 1867, from Sialkot.	126	·4	3·8
1871 ...	Ditto ditto ...	78·9	·4	2·5
1872 ...	Morar, February 1872...	68·2	1·1	2·8
1873 ...	Ditto, ditto ...	99·1	·2	3·7
1874 ...	Ditto. ditto ...	118·2	·87	3·11
	Average	98·08	·59	3·18
1875 ...	Morar	132·22	·87	3·13

Location and movements. *II. Location and movements.*—The head-quarters of this regiment were stationed at Morar from the 1st January to the 9th November, on which latter date the regiment marched to join the Camp of Exercise at Delhi.

Conservancy and latrines. *VII. Conservancy and latrines.*—Trenches with movable screens were in use and are stated to have answered well, but in the rains the trenches require to be dug in drained land, and the screens should be on broad wheels, and have some protection from the rain at top.

No special remarks are called for as regards the water-supply, diet, clothing, duty, or exercise.

Marches. *XIII. Marches.*—The regiment marched to the Camp of Exercise, Delhi, by regular marches from Morar, November the 11th, and remained in the Delhi Camp during the remainder of the year.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	365·3
Absent	91·1
Total ...	456·4

Digitized by Google

Station.	Period.		Strength.	Total Number of		Daily average No. of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Morar and Camp of Exercise at Delhi	1st January	31st December.	365·3	483	None.	11·45	132·22	None.	3·13

Number of deaths in hospital	0;	out of hospital	4;	total	4;	per cent. of total strength ...		0·87
„ invalided					19;	„ „ ...		4·16
„ sent on sick leave					10;	„ „ ...		2·19
„ of days spent in hospital	4,156;	per admission	8·60;	per man of total strength ...				9·10
„ „ on sick leave	1,200;	per man ...	120;	„ „ ...				2·64
Total temporary loss of service per man of total strength ...								11·74

There were no deaths in hospital during the year, but four men died while on furlough, *viz.*, 2 from cholera, 1 man murdered, and 1 the cause of whose death is unknown. Malarious fevers were the principal causes of admission into hospital.

Nineteen men were invalided, and this large number the medical officer states was owing to so many old soldiers being enlisted in 1858.

9th Regiment Native Infantry—Morar.

Surgeon C. W. S. Deakin has submitted the annual sanitary report.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Lucknow, February 1870	196·5	5·3	5·7
1871 ...	Ditto ditto	95·5	1·4	3·2
1872 ...	Ditto ditto	160·1	2	4·3
1873 ...	Ditto ditto	129·5	3	5·5
1874 ...	Morar, January 1874 ...	158·4	1·14	6·49
...	Average „ ...	148·	2·57	5·04
1875 ...	Morar	120·10	·42	4·82

Medical Officers.

I. Medical Officers.—Surgeon-Major G. B. Hadow was in medical charge of the regiment from the beginning of the year until March 27th, when he proceeded to a civil appointment, and Surgeon C. W. S. Deakin, who had been attached to the regiment since November 1874, took over charge, which he held to the end of the year.

Location and movements.

II. Location and movements, &c.—The regiment remained stationary at Morar during the year, but supplied two treasure parties to proceed to Dholepore. Each party was absent some 10 days.

The remarks made last year regarding the topography of Morar stand good for 1875.

The only meteorological peculiarity of 1875 was that the rains were late in setting in, and the weather preceding their advent was intensely hot.

The lines and huts are as represented in last year's report.

The drainage of the lines and station is stated to have been improved during the year.

Conservancy.

VII. Conservancy.—There has been a decided improvement during the past year in the sanitary arrangements of the station; much, however, remains to be done. At last the daily ablution of a large number of Commissariat elephants and bullocks, of the whole dirty linen of the station, and the washing of numerous natives in the river Morar, just above the station, has been strictly prohibited, as also has the deposition on the river bank above the station of all the bazar refuse, stable sweepings, &c. The conservancy of the bazar

Digitized by Google

latrines has been much more strictly attended to, and more dry earth has been used. The latrine behind the officers' bungalows, in 9th Native Infantry lines, should be removed.

Latrines. *Latrines.*—Latrines have been built in all the villages in cantonments, and the greater cleanliness consequent on their compulsory use has been most marked. I regret to state that no latrine has yet been built in the 9th Native Infantry lines, things remaining as they were last year, excepting that a movable latrine on wheels, consisting of a wooden frame-work covered with tarred canvas, has been in use for some months past as an experimental measure. Beyond securing privacy, the thing is a mistake, being an eyesore and very cumbersome.

Water supply. *VIII. Water-supply.*—This is obtained now from two large built wells and one small one. Eleven unbricked wells, the water of which was unwholesome, have been filled in during the year.

Diet. *IX. Diet, &c.*—The diet is reported to have been of good quality and obtainable at moderate prices. The clothing is the same as that reported on last year; the medical officer recommends the issue of cholera belts to the sepoys. The duty has not been heavy, and the men have had upwards of 5 nights in bed.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of regiment—

Present	619·52
Absent	85·06
Total	704·58

Station.	Period.		Strength.	Total Number of		Daily average No. of sick.	Per Cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Morar.	1st January 1875.	31st December 1875.	619·52	744	3	29·88	120·10	·48	4·82

Number of deaths in hospital 2; out of hospital 4; total 6; per cent. of total strength ... 0·85
„ invalided ... ... 15; „ „ ... 2·13
„ sent on sick leave ... ... 29; „ „ ... 4·11
„ of days spent in hospital 10,854; per admission 14·58; per man of totalstreugth ... 15·40
„ „ on sick leave 4,529; per man 156·17; „ „ ... 6·43

Total temporary loss of service per man of total strength ... 21·83

Principal causes of sickness. *XVI. Principal causes of sickness.*—As last year, the chief number of admissions has been from intermittent fever. I am convinced that the chief cause of this disease here is the exposure of the body from want of proper clothing when the men are off-duty.

Causes of mortality. *XVII. Causes of mortality.*—Six deaths occurred during the year, three among men on sick leave, one from dysentery, one splenitis, one bronchitis. One man shot himself. Two men died in hospital, one from phthisis, one from dysentery.

Epidemics. *XVIII. Epidemics.*—A mild epidemic of varioloid occurred in May, seven men being attacked; they were treated in a building far removed from the lines; the lines were thoroughly disinfected, as also were the huts and clothing of the patients, with sulphurous acid, carbolic acid, lime, &c. An outbreak of cholera occurred in the station, but not a single case occurred in the 9th Native Infantry. This, I think, was chiefly due to the filling up of several unbricked wells, the tainted water of which had been used for drinking, &c., by some of the men.

Vaccination. *XIX.* In June, when small-pox occurred, vaccination was attempted, but not a case was successful. In December all the children of the sepoys and residents in the regimental bazar were vaccinated successfully.

Inspection. Dr. Thorpe, Deputy Surgeon-General of the Agra Circle, made his sanitary and medical inspection of this regiment on the 15th February 1876. There is but little that calls for any special remarks as regards the lines, conservancy and water-supply of this regiment. The hospital remains unchanged, and all the details and arrangements in it for the proper care and treatment of the sick were quite satisfactory.

Digitized by Google

17th (The Loyal Poorbeah) Regiment of Native Infantry—Morar.

I. Medical Officers.—Surgeon G. C. Hall held medical charge of this regiment from 1st to 31st January 1875, inclusive. Medical Officers.

Surgeon L. E. Eades has been in medical charge from 1st February to 31st December 1875. This report is submitted by the latter officer.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily Sick.
1870 ...	Delhi, November 1867, from Barrackpore.	210·5	2·6	5·3
1871 ...	Ditto	157·6	2·5	4·9
1872 ...	Meean Meer, Feb. 1872	218·9	3·2	4·5
1873 ...	Do. do. ...	176·3	2·8	4·2
1874 ...	Morar, December 1874	103·4	2·4	2·1
	Average	173·34	2·70	4·20
1875 ...	Morar	94·37	3·04	3·11

II. Location and movements.—The whole regiment was on the line of march between Meean Meer and Morar from 1st to 22nd January 1875 inclusive; was stationed in lines or huts, Morar Cantonment, from 23rd January to 20th September; in camp near Morar (on account of cholera breaking out in the regiment) from 21st September to 15th October 1875; and again in lines or huts, Morar Cantonment, from 16th October to 31st December 1875 inclusive. From 10th to 15th April 1875 and from 21st to 27th October 1875, two detachments, average strength respectively 136·85 and 66, were sent to Dholepore and back for the purpose of escorting treasure to Morar, relieving at Dholepore a police guard from Agra. Location and movements.

III. Topography, &c.—A description of the topography of the station has been previously given by Surgeon Center, M.B., in his sanitary report for 1869, and by Surgeon E. R. Johnson, 33rd Regiment Bengal Infantry in his reports for 1869 and 1870. Topography, &c.

V. Lines, barracks, or huts.—The lines (Left Native Infantry) are on about the most unhealthy position or site that could have been chosen. The Morar river on the west bringing down all the drainage from 9th (Right Native Infantry) lines, sudder bazar, which is very large, and the bungalows on its bank depositing alluvia and filth at and about the bund—the Biswas Nulla on the east, stagnant during 8 months of the year, a torrent when rain falls, bringing down the drainage from the Artillery, Native Cavalry, and Left European Infantry lines; these two main drains of the station coalescing a few hundred yards to the north-east of our lines, make the site the very reverse of healthy. Lines, barracks, or huts.

The bed of the Morar river at the sudder bazar, which is nearly 2 miles from our lines, is on the same level as the highest point of the bund. This bund is to be, I believe, destroyed, and at present is being partially demolished. The Biswas Nulla is, I hear, to be diverted into the Morar river on the south side of the 9th Right Native Infantry lines. These measures may be of some service; they will reduce the main drains of the station to one in place of two, but we shall still get the benefit of all the drainage, as the Morar river cannot be diverted. The demolishing of the bund entirely will, to a certain extent, allow more drainage, &c., past our lines, and may, therefore, be beneficial.

The sepoys' huts are dark, badly ventilated, and are not in very good repair. They are furnaces in the hot season, from the construction of the roof; they admit plenty of water in the rains from the roof still, and the cold night air in the cold weather months, there being not a single door or even a *jhamp* in any one of the huts, unless the men, who are only poorly paid to afford any such extras, choose to supply the latter-named for themselves. From the above account it is not at all surprising that the men suffer from severe agues, spleen disease, dysentery, diarrhœa, bronchitis and pneumonia.

The cubic space and superficial area is miserably inadequate. A table given below will show the average cubic and superficial feet per naik and sepoy allowed for sleeping purposes. The measurements have been furnished by the Public Works Department. The monthly sanitary reports contain these particulars abbreviated. Contrasting the cubic and superficial space allotted respectively to the native officer, the havildar, and the rank and file, it is not surprising that sickness should be rare in the higher ranks, and so frequent and fatal in the lower. One reason of this very small space per man is that one quarter, or one section, or one-half sub-division (the whole accommodation for each company consists of two sub-divisions or four sections) has had to be set apart for cooking purposes, and for them alone.

The Regiment occupying these lines prior to the 17th Native Infantry, was the 34th Native Infantry. They cooked indiscriminately in their sleeping huts, a most unsanitary and objectionable proceeding in every sense. Even if the cubic and superficial measurements of the above section set apart were included, the accommodation would still be very very much below what the standard is. If the huts be inspected at night, when most of the men must of necessity be in their beds, it will be found that actually there is not room for a man to walk between two beds. To improve matters, I suppose, a wall running north and south divides

Digitized by Google

each company's huts into the two sub-divisions above mentioned, thereby effectually preventing ventilation of any kind; the prevailing winds here being east and west.

APPENDIX TO V, WITH EXCEPTION OF LAST LINE, WHICH REFERS TO XIV.

Table shewing the number of Naiks and Sepoys in each Company, with total superficial area and cubic space of each Company's huts; also average superficial and cubic feet allowed to each man.

Company and Building.	Number of Naiks and Sepoys occupying.	Total area in superficial feet.	Average superficial feet per man.	Total cubic feet.	Average cubic feet per man.	Remarks.
A. Company ...	81	1,526·25	18·84	14,449·38	178·38	The superficial and cubic measurements were obtained from the Executive Engineer's office, Military Works, Morar. The number of Naiks and Sepoys inhabiting the huts was obtained from the Quarter-Master of the Regiment. The Subahdars' and Jemadars' quarters are identically the same size.
B. ditto ...	80	1,526·25	19·07	14,506·88	181·33	
C. ditto ...	83	1,427·25	17·19	13,550·88	163·26	
D. ditto ...	81	1,517·5	18·73	14,991·63	185·08	
E. ditto ...	82	1,484·5	18·13	14,577·75	177·77	
F. ditto ...	80	1,509·25	18·86	14,812·12	185·15	
G. ditto ...	79	1,526·25	19·31	14,499·38	183·53	
H. ditto ...	80	1,526·25	19·07	14,499·38	181·24	
Total ...	646	1,2043·5	149·17	115,887·4	1,435·74	
Averages ...	80·75	1,505·43	18·64	14,485·92	179·46	
Hospital ...	50	2,720	54·4	31,280	625·6	

	Supl. ft.	Cubic ft.
Subahdar or Jemadar	190	1,520
Havildar... ...	181·75	1,054

Drainage. *Drainage, &c.*—The medical officer reports that the natural drainage of the station is fair, while that of the lines, owing to what he considers as their faulty position, is bad. He also states that, in his opinion, the artificial drainage of the station is deficient.

Latrines. The "trench system" of latrines with movable screens was in use in this regiment and is said to work fairly well; there is seldom, if ever, any offensive smell from them. It is reported on as not answering during the rains, because the screens are not roofed in, and the sepoys do not willingly resort to it; these latrines are also said to be inadequate for the requirements of the regiment.

Water-supply. The water-supply is stated to have been of bad quality and deficient in quantity; it is obtained from 3 pucca wells in the lines, and during the cold and hot months the supply from them has failed by 10 o'clock A. M., and then the men are compelled to take water (1), from the Morar river, an impure supply; (2), from kutcha wells dug near the edge of the Biswas nulla, and (3), from a well in the Commanding Officer's compound; and the medical officer states that these wells cannot be said to contain a supply of good and wholesome water.

Diet. The diet of the men is said to have been of good quality and of the usual description. The bazar supplies were good and abundant.

Clothing. The uniform is said to have been well suited to the climate and to the duties the men have to perform; the regimental boots are reported on unfavorably, as, when worn without socks, they cause many admissions into hospital from blistered feet. The medical officer writes that he does not consider the undress clothing or bedding of the men to be sufficient.

Duty and employment. *XI. Duty and employment.*—Not heavy, except when 2 Companies are struck off all duties in station for the purpose of going through the annual musketry course. Ordinary regimental and station guards. A company is sent every alternate week to the fort, sending small escorts with treasure, &c. Continuous nights in bed for year, average—

Havildars	8 in 9
Naiks	4·04
Sepoys	6·25

The Naiks, corresponding to Corporals, are as regards night duty the hardest worked. Brigade and Regimental parades, after the latter running drill from 15th November to 15th March.

Exercise. *XII. Exercise, &c.*—Clubs, wrestling, running races occasionally, a little gardening; there is not enough water for the last. A few of the men are fond of sport, but they generally prefer to rest and be quiet when off duty.

Marches. *XIII. Marches, &c.*—On the line of march from 1st to 22nd January 1875 inclusive. In camp near Morar on the station encamping ground from 21st September to 15th October 1875 inclusive. No service.

Digitized by Google

XIV. Hospital.—To the south-east of the lines nearly half a mile off; very inconvenient, both for the regiment and the hospital establishment. It is on the east bank of the Morar river, in about the best possible situation for developing what are called malarial fevers. A kutcha building with thatched roof, apparently always in fair repair, in reality just the reverse. Low sloping verandahs on the east and west. One dispensary or surgery at south end, and one godown at north. It is very badly ventilated; there must either be a through draught, the doors and windows being exactly opposite each other, or if doors on one side are closed, there must or can be no ventilation at all. Neither of these methods are free from objection. The ventilators in the roof (very improperly so called) are useless; they do not allow either the egress or ingress of air, and they do admit a very plentiful supply of water in the rains. Hospital.

One long narrow ward with pillars running down the centre from end to end, a most objectionable plan, very dark even on the brightest day, the verandahs come down so low on east and west sides. No bath-room, no dead house, no infectious disease ward, and no room or space to build them on. The latrine is the only good institution about the hospital, and it, for the same reason—want of space—is much too near the sick. Native Doctors' houses or quarters, servants' huts, cook-rooms, in fair repair apparently, but again, from want of space, crowding up towards the hospital, which ought, on the contrary, to stand well apart from, and on a higher level than, any of its out-houses.

	ft.		ft.		ft.		Supl. ft.		Cubic. ft.
Hospital ...	136	×	20	×	11½	=	2,720	=	31,280

is supposed to be large enough to accommodate 50 (fifty) patients; there are beds for this number; this would allow only—

Superficial feet per man, average	54·4
Cubic ditto ditto	625·6

The natural drainage is fair into the Morar river. There is no artificial drainage. Water-supply is of average quality, but not always sufficient in hot season and cold months. I have to order the guard to prevent any outsiders making any use of it whatever.

Charpoys for the sick are very faulty in construction, the foot or end of the charpoy as regards string is deficient, in consequence allowing a through draught on the legs and body of the patient. This is open to decided objection in the treatment of nearly all climatic diseases.

XV. Sickness, mortality and invaliding.—Strenth of Regiment— Sickness, mortality and invaliding.

Present	614·60
Absent	74·07
Total ...	688·68

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Meean Meer and Morar.	1st Jan. 1875	31st Dec. 1875	614·60	580	18	19·14	94·37	2·92	3·11

Number of deaths in hospital 18; out of hospital 3: total 21; per cent. of total strength		...	3·04
„ invalided 4;	„ „	...	·57
„ sent on sick leave 18;	„ „	...	2·61
„ of days spent in hospital 6,987, per admission 12·04;	per man of total strength	...	10·14
„ „ on sick leave 1,751, per man 97·27;	„ „	...	2·54
Total temporary loss of service per man of total strength		...	12·88

XVI. Principal causes of sickness— Principal causes of sickness.

	Number of admissions.	Percentage of total admissions.
Intermittent and remittent fevers, commonly called malarial	227	39·13
Blisters of feet	51	8·79
Dysentery	45	7·75
Abscess	36	6·2
Pneumonia	35	6·03
Bronchitis	19	3·27
Contusions	18	3·1
Diarrhœa	16	2·75
Chronic rheumatism	13	2·24
Cholera	9	1·55
Phthisis Pulmonalis	2	·34

Total admissions from all causes 580.

Digitized by Google

Taking the above list in a sanitary point of view, it will be patent to the most casual observer that four of the causes of diseases ought hardly to appear in the list at all. I allude to blisters of feet, pneumonia, bronchitis and cholera, which in the aggregrate give 114, or 19·67 per cent. of total admissions.

If native soldiers wore stockings or socks (which, with few exceptions, they won't do), we should not have blisters of the feet second on the list.

Principal causes of mortality.

Principal causes of mortality—

Pneumonia	8	Deaths.
Cholera	5	„
Dysentery	3	„
Remittent fever	1	„
Phthisis pulmonalis	1	„
Total	18	„

I have very little to add as far as this para. is concerned; the three fatal cases of dysentery (I made *post mortem* in one) and the fatal case of remittent fever were not by any means unlike enteric fever.

Pneumonia in relation to its pathology cannot be added to by me. (See Assistant Surgeon Birch's special report, Appendix II, Annual Report, 1870. Surgeon G. C. Hall's sanitary report on this regiment, 1874.) I have only one remark to make as regards its treatment, *viz.*, that bleeding, although the pulse be weak and heart's action very feeble, ought to be resorted to before it be too late, and immediately prior to the venesection I would advocate 4 to 6 ounces of brandy. Object 1st, give the heart some artificial strength; 2nd, give the lungs less to do.

Epidemics. *XVIII. Epidemics.*—There was an outbreak of cholera in the month of September 1875; strictly speaking, it could not be called epidemic, 9 cases in the whole regiment, 1st case on 1st September, 9th and last case on 20th September.

When a case of cholera occurred in the lines, the hut from which the case was admitted was vacated, the men put under canvas to the north-east of the lines, prevailing wind being south-west, and the huts, floors and walls scraped, fumigated and re-leeped. When it was patent that the whole regiment was infected, including the hospital, orders were given for a move into camp. Lines and hospital were immediately vacated, and the regiment encamped on the cantonment encamping ground to the south-west of the lines, crossing the river to its western side. Not a single case occurred after the move, and the regiment did not return to its lines for 25 days, and then only after the huts, bazar, band quarters, married sepoys' quarters and hospital had been scraped, fumigated, leeped or white-washed as the case might be. Camp did not disagree with the men. There was one case of so-called dysentery which proved fatal, but this result was due more to entero-colitis, ending in perforation of the cœcum, than to anything else. These measures were recommended by me and carried out either by the commanding officer's orders, or those of the Brigadier General Commanding the district.

Vaccination. *XIX. Vaccination.*—None. Every sepoy is carefully examined before enlistment, and if he be not protected by previous variola, as evidenced by cicatrices or vaccination, he is at once vaccinated. Not one case of small-pox in the regiment during the year 1875.

Recommendations. *XX. Recommendations*—see para. XVIII—were all carried out either by the Commanding Officer or by the Brigadier General Commanding Gwalior district.

Special observations and remarks. *XXI. Special observations and remarks.*—Recruiting. The number of recruits entertained during the year 1875 was 45. Not sufficient in number, I know; authorised strength being, I believe, 712, and actual strength on 31st December 1875 being only 697. The quality of the recruit is good physically.

Inspection. Inspected by Dr. Thorpe on the 17th of February 1876. He considers the lines of this regiment to be "badly situated, badly constructed, deficient in ventilation and cubical space." The water-supply is said to be decreasing yearly, and is accounted for by the bed of the Morar river becoming deeper, and thus draining the water away from the wells on its banks. Dr. Thorpe recommended that the wells should be deepened. Notwithstanding the rather confined space, the trench system of latrine is in use and works well, but it is suspected that many of the men resort to the jungle. Of the hospital Dr. Thorpe reports as follows: "It cannot be worse; is badly situated, and deficient in light and ventilation." The supply of medicines and instruments were sufficient and in good state of efficiency.

24th (Punjab) Regiment Native Infantry—Jhansi.

Medical Officers. *I. Medical Officers.*—Surgeon F. W. Wright has submitted the annual sanitary report, from which the following information has been taken. Surgeon H. J. Linton held charge from 1st January 1875 to March 1875. Surgeon G. C. Hall from March 1875 to 31st July 1875. Surgeon F. W. Wright from 1st August 1875 to end of year.

Digitized by Google

The detachment at Lalitpur has been under the care of Mr. Saunders, the Civil Surgeon. Third class hospital assistant Sheikh Mahomed Ainoodeen has been in charge of the detachment at Sipri. Detachment.

II. Movements.—The regiment has been stationed at Jhansi during the year. The detachments sent to Lalitpur and to Sipri have been renewed at regular intervals. Movements.

Year.	Station.	Per cent of Strength.		
		Admissions.	Deaths.	Daily sick.
1870	Ruwal Pindi, February 1868, from Peshawar ...	199	1·9	5·2
1871	Meean Meer, October 1870	136·2	1·2	4
1872	Ditto, ditto	273·6	1·9	4·3
1873	Ditto, ditto	166·6	2·5	3·07
1874	Jhansi, 9th February 1874	103·1	1·42	2·75
	Average	175·70	1·78	3·86
1875	Jhansi, ditto ditto.	122·10	·86	3·79

III. Topography.—The country is said to be very poor, and certainly the general appearance of the inhabitants bears witness to this fact. The soil is loose and gritty, and appears to consist of crumbled granite. On all sides small hills, chiefly composed of granite, may be seen; between them are plains full of ravines and nullas, and, where not cultivated, are covered with spear-grass, jungle-grass, corunda bushes, &c. Here and there, near a village, are cultivated fields into which the black buck, ravine deer, &c., often come to browse. Topography.

The station itself is very open. It is generally on a level with the surrounding country, so that there is free movement of air through it. Close to the station, and only separated from the Native Infantry lines by about ¼ mile, is the native city of Jhansi, containing thirty or forty thousand people under native raj. Outside the city, and about 1½ miles from the station, is a fair sized tank called Lutchmee Talao. Through the south part of the station winds a small nulla from north-west to south-east. There are several good roads passing through the station to Cawnpore, Gwalior, Sipri, Lalitpur and Nowgong. An inferior road leads to the deserted city of Orcha, situated upon the river Betwa, about 7 miles south-east of Jhansi. This city is said to have been deserted after a severe sickness or a famine, the date of which I have not been able to ascertain.

IV. Climate.—Very hot, and perhaps it appears hotter than it really is owing to the rocky, dried-up look of the country in the hot weather. No observations were made upon the temperature of the air at the regimental hospital, but Dr. G. C. Hall obligingly allowed me to take some from the records of the new Jhansi dispensary. The highest temperature occurred in June, *viz.*, 115·9°F. The rainfall amounted to 25·8 cubic inches for the year, being less than usual. The country is delightful to look at in the rainy season after the universal brown hue gives place to the green from the revival of the parched vegetation. The cold weather is very pleasant, although the great difference between the night and day temperatures is much felt. Climate.

V. Lines.—The lines are kept clean and are always well drained, because there is a natural slope which prevents any lodgment of water. Trees are planted between the rows of huts. The huts are arranged in parallel rows placed east and west, so that the prevailing winds can move freely along the interspaces. Lines.

The huts themselves are not good. They are built too close together and in two rows; they are disposed at right angles to the prevailing winds, which can, therefore, only blow past the doorway at each end. The ventilation of these latter is further impeded by a partition wall completely dividing each hut or barrack into two compartments, holding about six men each. The floors of the huts are in a great many cases considerably below the level of the ground outside. From what I have been able to ascertain from the men, I believe the lines are not roomy enough.

The zenana lines are very bad. The huts are small, badly built, and much too close together, and, I believe, too few for the number of married men.

I agree with what Surgeon Linton says in last year's report about the inconvenience and bad consequences of the lines being so near the native city. Venereal disease has again this year caused many admissions, and in some cases a long loss of service to Government. Venereal disease.

VI. Drainage.—Naturally good. Drainage.

VII. Latrines.—During the year the trench system has been discontinued, because the Jhansi soil did not deodorize sufficiently, and the result was that the latrine ground became a nuisance. Some ground, about 13 beegahs, in which latrine trenches had been dug, was cultivated, but only a little over one rupee profit was made, owing, it is said, to the want of good irrigation. Since April, gumlahs and filth receptacles have been used. The excreta are removed from the gumlahs and are put as quickly as possible into the filth receptacle, which is carted to a place about two miles away, where the contents are buried. This system is a great improvement. The inhabitants of the bazar are now no longer annoyed by bad smells Latrines.

Digitized by Google

from the latrine ground, distant about 200 yards. Small urinals are placed on each wing at a short distance from the huts; they consist of matting enclosures, in which are placed several gumlahs.

Water. *VIII. Water.*—The water is obtained from pucka wells, and is good and ample.

Diet. *IX. Diet.*—With few exceptions the men look well fed. The exceptions are generally Dogras, one of whom was detected at musketry to be under-feeding. The food supplies in the bazar have been good.

Clothing. *X. Clothing.*—The uniform clothing of the men is good. Some, however, especially recruits and young soldiers, occasionally come to hospital with insufficient private bedding and clothing, and say that they have not money to buy more. As usual, the regulation boot has caused many to come to hospital with blisters of the feet. Some of these sores inflamed and sloughed, and others healed very slowly in hospital. When the sores were small, the men were allowed to wear the native slipper at parade until they were healed.

Duties. *XI. Duties.*—Have not been excessive. The thorough course of musketry that the sepoy has to go through at the present time seems to bring into notice all who are not in as good state of health, or who do not keep up their physique as they ought to. The duties have consisted of the ordinary cantonment duties and parades, and detachments have marched to and from Sipri and Lalitpur. Nights in bed 10·43.

Exercise. *XII. Exercise.*—Shikar is the amusement that is most popular; indeed I know of no other. Shooting can be had close to the station.

Marches. *XIII. Marches.*—The regiment as a whole has not made any marches during the year, but detachments have been furnished, as stated above.

Hospital. *XIV. Hospital.*—Fully described in previous reports. My experience of the building leads me to the conclusion that it is not big enough. When the hospital is quite full, as in September and October, the air acquires a disagreeable 'frowsy' smell, which is only improved by reducing the number of inmates as much as possible. This was done, when the rains were over, by putting a great many in tents outside, and by making convalescents, for two or three days, of men who appeared to be nearly well. This difficulty in keeping the hospital air sweet is partly, I think, due to the fashion of the building. There are plenty of openings for the admission of air on all sides, but these openings are low when compared with the height of the centre of the building. The hospital charpoys are infested with bugs, &c., and as no bug-boilers are allowed to native hospitals, the nuisance cannot be thoroughly overcome. In the hot weather the heat of the sun expels the intruders for a time when the charpoys are exposed to its effects. During the past year there have been several cases of slowly-healing ulcers and of slow recovery from other diseases; these men remain in hospital day after day without change of air. They are too weak to walk far, or walking would retard the healing of the ulcer. Might not these patients be allowed to ride out on an elephant, or drive every day in a bullock hackery, in the same way that European soldiers are?

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	613·43
Absent	85·98
Total	699·41

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average No. of sick.	Percent of Strength per Annum. Admission.	Deaths.	Daily average sick.
Head-quarters, Jhansi	1st January ...	31st December...	569·57	607	1	19·44	119·13	·19	3·81
Detachment, Lalitpur	Ditto ...	Ditto ...	71·36	122	...	3·16	170·96	...	4·42
Ditto Sipri ...	Ditto ...	Ditto ...	32·50	20	...	·67	61·53	...	2·06
Total ...	.....	.....	613·43	749	1	23·27	122·10	·16	3·79

Number of deaths in hospital 1; out of hospital 5; total 6; per cent. of total strength	...	·86
„ invalided ... ... 15; „ „	...	2·14
„ sent on sick leave ... ... 4; „ „	...	·57
„ of days spent in hospital 8,495, per admission 11·34; per man of total strength	...	12·14
„ „ on sick leave 441, per man 110·25; „ „	...	·83
Total temporary loss of service per man of total strength	...	12·77

The past year has been very healthy; there have been no epidemics, although in the months of January and February small-pox shewed itself in the native city of Jhansi, on which account quarantine was established. One sepoy only caught the disease.

It will be seen what a rise there was in the venereal diseases as soon as the regiment arrived at Jhansi, *i. e.*, in the year 1874; there is, coincidently, a remarkable diminition in the fevers. Venereal disease was the cause of a young sepoy being brought before a special medical committee and of being recommended for discharge from the service. He had been a year in hospital, at the end of which he was still far from being fit for work. The proximity of the native city, in which there is no lock-hospital, I believe, is the cause of the amount of venereal disease.

Digitized by Google

One man died in the regimental hospital from remittent fever. Five men died out of hospital; Of the illnesses of three of these men no account was received. One Subhadar was shot by a sepoy, who was subsequently hanged at Jhansi. Fifteen men were invalided for discharge from the service; general debility was the principal cause. Deaths. Invalided.

Table of sickness compiled from the monthly abstracts of the years 1873, 1874, 1875.

Name.	1873.	1874.	1875.
Small-pox	.....	.....	1
Fevers	688	325	302
Rheumatism	Not mentioned in old form of monthly abstract.		19
Venereal diseases...	16	40	52
Ophthalmia	10	8	19
Bronchitis	Old form has only 'diseases of chest.'		11
Pneumonia			4
Diseases of the chest	34	27	Not in new form.
Dysentery	20	11	13
Diarrhœa	11	3	6
Liver diseases	2	.....	.....
Spleen diseases	Not mentioned in old form.		7
Ulcer	Ditto		41
Injuries	Ditto		56
Wounds	6	29	Not in new form.
Other diseases	138	203	225

The sickness of the detachments is included. Both at Sipri and at Lalitpur a few cases of venereal occurred, but these may sometimes have begun in Jhansi.

XVI. Recruiting.—The following is a table of the caste, age, height, &c., of 44 recruits enlisted during the year :— Recruiting.

Caste.	Number.	Average age.	Average height.	Average chest measurement.
Pathans	7	21·57	5 feet 8·60 inches	34·14 inches.
Sikhs and Jât Sikhs	21	20·35	5 „ 8·63 „	35·43 „
Punjabee Mahomedans	6	22·40	5 „ 9·30 „	35·85 „
Lobanas	2	18·	5 „ 7·37 „	34·75 „
Dogras	8	18·72	5 „ 7·81 „	33·84 „

XVII. Vaccination.—All the men and camp-followers with their children, who are not at all or are doubtfully protected against small-pox, have been or are being vaccinated. Most of the men were protected by an attack of small-pox, or by inoculation. Up to the present time about 10 per Company have been vaccinated. In those who were operated on, an areola, more or less fever and more or less pain in the arm-pits occurred. In some the clusters of vesicles were crushed by the rubbing of the uniform coat. Vaccination.

SAUGOR DISTRICT.

(INCLUDING THE STATIONS OF JUBBULPORE, SAUGOR, BANDA, NAGODE AND NOWGONG.)

	Bengal Troops.		Madras Troops.	
Average daily strength present during the year ...	Cavalry only	371·62	Cavalry 238·47; Infantry	2621·44
Average daily sick per cent. of average strength ...	„	3·42	„ 3·22 „	2·99
Ratio of mortality per cent. of average strength ...	„	·22	„ 1·43 „	1·19

16th Regiment Madras Native Infantry—Jubbulpore.

I. Medical Officers.—Surgeon-Major J. R. Theobalds throughout the year, except from 20th August to 21st September and from 17th October to 25th October. Surgeon W. O. B. White, Army Medical Department, was in charge from 20th August to 21st September and from 17th to 25th October. Surgeon-Major J. R. Theobalds submits the sanitary report of the regiment. Medical Officers.

Digitized by Google

Location and movements, &c.,

II. Location and movements, &c.—The regiment has been stationary at Jubbulpore during the year. The rainfall of 1875, 51·68 inches, is described as having been under the average of former years, and was very much less than that of 1874.

Lines, barracks and huts, &c.

V. Lines, barracks and huts, &c.—All that has been said in the report for 1874 regarding the lines, drainage, conservancy, water-supply, &c., &c., is applicable for 1875.

Hospital.

XIV. Hospital.—Vide report for 1874. The hospital is in good repair. It is built on a nice open space on the eastern boundary of the parade ground; well ventilated; no overcrowding. Bedding and clothing in good order.

Sickness, mortality, and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the regiment—

Present	657·79
Absent	32·92
TOTAL	690·71

STATION.	PERIOD.		Strength.	TOTAL NUMBER OF		Daily average No. of sick.	PER CENT. OF STRENGTH PER ANNUM.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Jubbulpore.	1st January 1875.	31st December 1875.	657·79	593	None.	17·13	90·15	None.	2·60

Number of deaths in hospital none; out of hospital 3; total 3; per cent. of total strength		...	·43
„ invalided	39; „ „	...	5·64
„ sent on sick leave	2; „ „	...	·28
„ of days spent in hospital 6,252·45; per admission 10·52; per man of total strength		...	9·05
„ „ on sick leave 365; per man 182·5; „ „		...	·55
Total temporary loss of service per man of total strength		...	9·60

Principal causes of sickness.

XVI. Principal causes of sickness.—The principal diseases seem to have been of malarious origin; the fevers were generally of a mild tpye and amenable to treatment. Seventy-seven cases of blistered feet were admitted into hospital. There were no deaths during the year. Two sepoys had small-pox in its modified form, and of 309 persons vaccinated in the regiment, the operation was successful in 248; of these 42 were sepoys.

Inspection.

Deputy Surgeon-General Tyrell Ross, F. R. C. S., made his inspection of this regiment on the 22nd December 1875.

He reports that the new lines for the band and drummers, which were completed in October 1874, were spacious and good—no change has been made in the regimental lines. On the day of inspection most of the street side-drains were in a very nasty state. The system of private latrines remains in the same condition as when last reported on—now, "slush" is seen to be escaping from each enclosure almost into the street side-drains. The public latrines are well used by the men who now frequent them from choice. The whole surface of the trenched ground was under cultivation, and the trenches in use were very satisfactorily worked. There is no under-feeding. The men drink "mhowa" spirit, which is sold in a liquor shop kept under regimental supervision in the lines. The boots are stated to be very badly fitted, and of no particular pattern. Foot galls are very frequent. Mr. Ross reports that the hospital was complete in every respect, and very tidy and neat. He inspected the men on parade in their native clothing, and observes that there were many old men in the ranks; 30 recruits were seen, and some of them were of good physical condition.

Lord Napier visited this hospital on the 23rd November, and recorded: "The hospital is in excellent order, and creditable to the military and medical authorities."

3rd Regiment Madras Light Cavalry—Saugor.

Medical Officers.

Medical Officers.—Surgeon E. Fawcitt held charge of the head-quarters until the 5th October, when relieved by Surgeon D. S. Bateman, who has since been in charge. Surgeon-Major Theobalds has remained in medical charge of the squadron at Jubbulpore during the year.

Digitized by Google

The following information has been gleaned from Surgeon Bateman's sanitary report:—

II. Location and movements.—Head-quarters and 2 squadrons arrived here from Kamptee on 9th January 1869, and have not since moved. The squadron at Jubbulpore reached there from Kamptee on 30th December 1868, and has remained there till now. Location and movements.

V. Huts, &c.—The huts are the same as described in former reports. They have been kept in good repair; they are much less spacious, and worse ventilated than I have hitherto seen Madras troops occupy. But, owing to the absence of the detachment at Jubbulpore, and the paucity of children and followers, there is no overcrowding. The monthly average number of residents in each hut during the past year was 2·24, giving to each a cubic space of 535·71 feet. Huts &c.

VI. Drainage.—No change has been made in the system of drainage. Drainage.

VII. Conservancy and latrines.—Same as last year, with the exception of the institution of a small movable latrine, in which a fresh trench is dug every day and the old one closed in. The men do not apprecate it as much as the large latrine, owing to no privacy being secured by partitions as in the latter. The dry-earth process has been carefully adhered to. Conservancy and latrines.

VIII. Water-supply—Has been good and abundant during the year. No change has been effected in any of the sources, which are described fully in former reports. Water-supply

IX. Diet.—The men seem well nourished. The bazar is plentifully supplied with grain, which has been cheap during the year owing to abundant harvests. Compensation is given for the dearness of rice, the monthly average for the year being Rs. 2-8 per man. Diet.

X. Clothing.—No alteration made in the clothing. Clothing.

XI. Duty and employment.—The ordinary duties of a cavalry corps are described in former reports. Number of nights in bed, 5 at head quarters and 3·37 in detachment. Duty and employment.

XII. Exercise, amusements, &c.—The evening stable duties in the cavalry preclude the men joining in sports, &c., but a fair number work in the regimental garden, which they very creditably keep up. Exercise, amusements, &c

XIV. Hospital.—The new hospital has been fully described in last report. New iron cots and bedding have been recently supplied. At no period during the year has there been overcrowding. The average daily sick was only 6·91, giving a cubic space of 4297·42 to each patient. The ablution rooms, latrines and out-offices are all perfect. Hospital.

XV. Sickness, mortality, and invaliding.—The following form gives the sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	238·47
Absent	...	...	...	32·94
		Total	...	271·41

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Saugor ...	1st Jan. 1875	31st Dec. 1875	167·47	243	3	6·98	145·10	1·79	4·16
Detachment at Jubbulpore ...	Ditto	Ditto	71	20	1	·70	28·16	1·40	·98
Total ...	.....	.....	238·47	263	4	7·68	110·28	1·68	3·20

Number of deaths in hospital 4; out of hospital none; total 4; per cent. of total strength			...	1·47
„ invalided 5;	„	„	...	1·84
„ sent on sick leave ... ...none;	„	„	...	none
„ of days spent in hospital 2809·20; per admission 10·66;	per man	„	...	10·32
„ „ „ on sick leave 357;* per man 357;	„	„	...	1·31
Total temporary loss of service per man of total strength			...	11 64

XVI. Principal causes of sickness.—Fevers of a mild, uncomplicated type are by far the most prevalent diseases in this station. They commence after the rains in September and continue throughout the cold weather. In this regiment there were 135 cases out of the total of 263 admissions from all causes. The cases, as I mentioned, are of a very mild nature, and hardly ever complicated with congestion of the spleen. Wounds and accidents are the next most prevalent cause of admission. There were 24 cases; these were caused by kicks from horses and a few from falls, none severe. Ulcers and abscesses caused 24 also, and rheumatism (most of the cases muscular) 16. Principal causes of sickness.

XVII. Principal causes of mortality.—There were only 4 deaths in the regiment, 3 at head-quarters and 1 with the detachment; 2 deaths due to pneumonia, 1 ague, and 1 remittent fever. Principal causes of mortality.

* No man went on sick leave for the year, but one who obtained it in the end of 1874 returned on 24th December 1875.

Digitized by Google

Epidemics. *XVIII. Epidemics*.—No disease assumed an epidemic form.

Vaccination. *XIX. Vaccination*.—Fifty-eight cases were vaccinated during the year, 57 successful and 1 unsuccessful. The entire regiment is supposed to be protected by vaccination from small-pox. This is doubtful as regards the women; but all men, sepoys as well as followers and their children, are now protected. There has been no case of small-pox in the regiment.

Inspection. The Deputy Surgeon-General of the Jubbulpore circle inspected the lines and hospital of this regiment on the 11th December 1875. He found the sanitary condition of the lines (which at the time of inspection were occupied by two very weak squadrons) to be satisfactory. The horse lines were very neatly kept, and trees which were planted three years ago were growing well.

Drainage. The natural drainage was very good. The sick were located in the hospital which was built some two years ago.

Detachment 3rd Madras Light Cavalry—Jubbulpore.

Inspection. Inspected by Deputy Surgeon-General of the Jubbulpore circle on the 22nd December 1875. He noticed some improvement in the lines; spaces had been cut through them for ventilation, and some attempts had been made to improve the condition of the private latrines. He inspected the men at stables and considered them of good appearance, but there were a good many old men amongst them.

5th Regiment, Madras Native Infantry—Saugor.

Medical Officer. *I. Medical Officer*.—Surgeon F. H. Blenkinsop has been in medical charge of the regiment during the whole year, and reports as follows:

Location and movement. *II. Location and movement of the regiment*.—The regiment occupied the Native Infantry lines situated near the sudder bazar. There had been no movements during the past year.

Topography. *III. Topography, &c.*—The regiment was stationed at Saugor throughout the year. The lines, which are considered to be placed on an objectionable site, are the same the regiment occupied in 1874.

Drainage. The rain-fall of the year is described as having been above the average. The drainage is said to have been defective.

Latrine. The "dry-earth" system of latrine has been in use; the position of the latrine was changed every two months, and the crops raised on the waste ground in which the night soil was buried, are said to have been very fine and luxuriant. The water-supply is abundant and is of good quality. The bazars have been well supplied with the several articles which compose the sepoy's diet, and these were of good quality and cheap. The men, when in undress, are not sufficiently warmly clothed for the cold weather.

A new hospital, built on the standard plan, was in course of completion, and will fully meet the requirements of the sick.

Principal causes of sickness. *XVI. Principal causes of sickness*.—To my mind, the chief causes of sickness have been malaria, overcrowding in huts, which are erected on a most indifferent site, want of proper clothing, and insufficient nourishment.

Principal causes of mortality. *XVII. Principal causes of mortality*.—The mortality has been considerably higher than it was even in last year, and for the reasons stated above. There have been 11 deaths in, and 5 out of, hospital, making a total of 16.

Sickness, mortality and invaliding. *Sickness, mortality and invaliding*.—Strength of the Regiment—

Present	649·23
Absent	28·81
Total	678·04

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Saugor ...	1st January	31st December	649·23	566	11	17·04	87·18	1·69	2·62

Number of deaths in hospital 11; out of hospital 5; total 16; per cent. of total strength		...	2·35
„ invalided ... ... 7; „ „		...	1·32
„ sent on sick leave ... ... 17; „ „		...	2·50
„ of days spent in hospital 6219·60; per admission 10·98; per man of total strength		...	9.17
„ „ on sick leave 2094; per man 123·17; „ „		...	3·08
Total temporary loss of service per man of total strength		...	12·25

Digitized by Google

XX. Recommendations.—Recommended that men with old tunics should get them cut into jackets, to be worn in the cold weather when off duty. An order has been issued to this effect, at the same time allowing the alterations to be made in the regimental workshop. I have also recommended that the roads in the lines should be metalled, and stone drains substituted for the ditches.

Deputy Surgeon-General J. T. C. Ross made his medical inspection of this regiment on the 10th December 1875. He reports that the lines are bad, and the huts too small both in superficial space and in height, and are overcrowded. The natural drainage was good. There were two latrines, one for each wing, and on the trench system. Well water-supply runs short in the hot season. As regards the question of diet, the Deputy Surgeon-General remarks that there were more reports of under-feeding in this regiment than in any other under his administrative superintendence; but there seems to be no particular reason why this should be the case, as the families of men in the regiment are not larger, and food is not dearer, than in other stations. Mr. Ross saw several men with foot galls in the ranks, caused by badly fitting boots. The hospital was complete in the furniture allowed by regulation, and in all the medical details for the proper care of the sick. Mr. Ross saw the men off duty on undress parade: there were about 30 recruits, all poor and weedy-looking men; the men were small, in poor condition; and there were many old men in the ranks. Inspection.

Head Quarters and Left Wing, 20th Regiment Madras Native Infantry—Banda.

I. Medical Officers.—Surgeon C. Sibthorpe from 1st January to 20th April. Surgeon A. A. Thomas from 21st April to 18th October, and Surgeon J. Backhouse from 19th October to 31st December; the latter officer supplies the report. Medical Officers.

II. Location and movements.—The head-quarters had been stationed at Banda, North-Western Provinces, throughout the year. There were no marches during 1875. Location and movements.

IV. Meteorology and climate.—The year was remarkable for the lateness of the setting in of the rains, and the severity of the hot weather preceding them. The rains commenced on 24th July and terminated on the 7th October; the total rain-fall was 66¾ inches. Meteorology and climate.

V. Lines and huts. The lines and huts were described in the report for 1874, and there was not anything in connection with their sanitary condition during 1875 calling for any further special remarks. The two tanks alluded to in report for 1874, and which are said to receive the drainage from the lines, are considered to be objectionable in a sanitary point of view. Lines and huts.

The drainage remains the same as described in last year's report. Drainage.

The condition of the latrines and the conservancy arrangements are the same as in 1874.

The water-supply is said to be good. Water supply.

The various articles of diet were of good quality, and, with the exception of rice, were sold at a reasonable price. The men are fairly nourished, but the medical officer states that there were some cases of under-feeding amongst those who had large families, or a number of relatives and friends living on them. Diet.

The uniform is reported on as being quite suitable to the season and to the duties the men have to perform, but the undress clothing of the sepoys is said to be insufficient for the cold weather of this presidency. Clothing.

The duties consisted of the usual parades, and the men have had 3·30 nights in bed during the year. Duties.

The men play at cricket, keep up a vegetable garden, go out shooting, fishing, &c. The regiment has not been on the march during the year. Exercise.

XIV. Hospital.—The hospital has worked very well during the past year and has answered all requirements, otherwise the same as previous years. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	...	376·90
Absent	...	...	...	...	...	310·90
			Total	...	...	687·80

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters and Left Wing, 20th M. N. I., Banda ...	1st Jan. 1875	31st Dec. 1875	376·90	531	4	15·48	140·88	1·06	4·10

Number of deaths in hospital 4; out of hospital 3; total	7;	per cent of total strength	... 1·02
„ invalided	18;	„ „	... 2·61
„ sent on sick leave	7;	„ „	... 1·02
„ of days spent in hospital 4189;	per admission 7·89;	per man of total strength	... 6·09
„ „ „ on sick leave 1632;	per man ... 2·33;	„ „	... 2·37
	Total temporary loss of service per man of total strength		... 8·46

Principle causes of sickness.

XVI. Principal causes of sickness.—Malarious fevers 302, conjunctivitis 65, rheumatism 31, syphilitic affections 16, itch 12, dysentery 10, boils 10—total admissions into hospital for the year 1875, 531, out of which 302 were cases of malarious fevers, thus only leaving 129 of other diseases, against 714 admissions for 1874; out of which 523 were cases of malarious fevers, thus only leaving 191 cases of other diseases; and also showing how very prevalent malarious fevers are in this station.

The average present strength at Banda for 1874 was 346·93, and the average present strength at Banda for 1875 was 376·90, thus showing that the men have become somewhat acclimatised and enjoyed better health in 1875 than 1874.

Deaths.

XXII. Deaths.—There were four deaths in the head-quarters and left wing hospital, Banda; were all privates and of long service. Two from ague, one from acute rheumatism, and one cause unknown.

Epidemics.

XVIII. Epidemics in the Head-quarters Wing.—None during 1875.

Vaccination.

XIX. Vaccination.—Thirteen privates were vaccinated during 1875, 8 were successful, 3 modified, and 2 unsuccessful; 82 children were vaccinated during 1875, 74 were successful and 8 unsuccessful.

Recommendations.

XX. Recommendations.—Recommendations consisted of a few verbal ones, which were always attended to, and every possible assistance was rendered.

Remarks.

XXI. Remarks.—The medical history of this regiment has for years back been a very sickly one, chiefly due to fevers and the general inferior physique of the men, as shown in this table:—

Years.	Average strength.	Total admissions.	Average daily sick.	Total deaths in hospital.	Total admissions from fevers.	Total deaths from fevers.	Sent on sick leave.	Invalided or pensioned.
1869 ...	688·90	530	16·08	3	206	...	...	...
1870 ...	687·50	799	22·31	3	412	...	...	...
1871 ...	655·00	866	28·72	3	385	...	12	3
1872 ...	660·00	1059	31·61	5	452	2	9	8
1873 ...	669·70	1339	62·08	5	315	...	24	25
1874 ...	346·93	714	20·75	5	522	5	6	19
1875 ...	376·90	531	15·48	4	302	4	7	18

Inspection.

Inspected by Dr. J. P. Walker, Deputy Surgeon-General of the Allahabad Circle, on the 13th December 1875 at Banda.

On the day of inspection the strength of the head-quarters and left wing of this regiment was 377. Dr. Walker inspected all the men off duty, and states that he found them in good condition, and that the recruits had been judiciously selected. All the sanitary and conservancy arrangements in the lines were considered to be satisfactory. The hospital accommodation was very good, as, allowing 1,500 cubic feet per patient, 35 men could be received in it; but the daily average number of sick had been less than 12. The interior of the hospital was clean and tidy, the patients clean and comfortable, and their treatment, general and therapeutic, was satisfactory. Twenty-two patients were under treatment on the day of Dr. Walker's inspection, and of them there were 13 suffering from intermittent fever.

Hospital.

Digitized by Google

11th Regiment Madras Native Infantry—Nagode.

I. Medical Officer.—Surgeon C. A. Harvey was in medical charge of the regiment throughout the whole year, and the annual sanitary report for 1875 was submitted by him. Medical Officer.

The regiment has been located at Nagode throughout the year. A description of the topography, &c., of this station has been given in report for 1873.

IV. Meteorology and climate.—The climate of Nagode is very variable, being extremely cold in January, February, November and December, very hot and oppresive in April and May, and moist almost to saturation during the south-west monsoon, which generally sets in early in June and lasts to the end of September. During the year under review, the health of the regiment was very good. In January and February the usual cold weather was experienced, but the men, being warmly clothed and well housed and fed, enjoyed very good health; and the admissions for pneumonia, bronchitis and other affections, usually due to cold, were not numerous. In March the weather began to get warm, but no great discomfort was experienced from the heat until the beginning of April, from which date to the breaking of the monsoon the climate was exceedingly trying, owing to the prevalence of hot westerly winds which blew almost every day from sun-rise to sun-set, rendering the use of punkahs and kus-kus tatties very necessary to the health and comfort of the European portion of the community. Notwithstanding the trying nature of the climate, there was very little sickness during the hot months, and complete immunity was enjoyed from cholera and other epidemics; and although the disease just mentioned broke out with great violence in the native town of Nagode, where it continued to prevail with more or less intensity until the rains had set in, and also made its appearance in most of the surrounding villages, not a single case occurred in the lines or cantonment. Meteorology and climate.

The monsoon was rather tardy in breaking this year. Slight showers in the early part of June seemed to herald its immediate approach. The weather became exceedingly sultry and oppressive, and the sky overcast with dense masses of clouds; but it was not until the 24th of the month that a heavy downpour (3·30 inches) came to our relief and cooled the heated atmosphere. The rains were unusually heavy this monsoon, the average here being about 50 inches; but this year the total rain-fall has amounted to 72¼ inches.

Most rain fell in July, 43·70 inches being registered that month. In August there were 11·10 inches, and in September 6·40. The heaviest fall on any one day took place on the 31st of July, when 9·20 inches were registered, and the aggregate fall of the four last days of the same month reached the very considerable amount of 25·90 inches. This very heavy rain did great damage in the lines and caused much discomfort to the sepoys and their families, but gave rise to no actual disease.

V. Lines, barracks or huts.—A full and detailed description of these was given in the report for 1873. Since that time no alteration of importance has taken place. There has been no overcrowding. The lines have been kept clean, and conservancy arrangements carefully attended to during the year. Lines, barracks or huts.

VI. Drainage.—The drainage of the lines is now in a very satisfactory condition; the old V shaped drains, which were found very difficult to keep clean and allowed considerable soakage of sewage water, have been replaced by masonary saucer-shaped ones, which effect their purpose admirably; one of these drains runs along each side of the rows of huts, with fall to the south, where all the street or subsidiary drains join at right angles a larger one of the same description, and this in its turn unites with a similar one at the south-east end of the lines which carries the sewage water into a large nullah that eventually opens into the Nagode river. The drains are kept clean by being swept every day, and they are flushed with water twice a week. Drainage.

VII. Conservancy and latrines.—The system of conservancy of the lines and cantonment having been fully described in the report for 1873, the subject need not be again referred to in detail. The two public latrines on the "trench system," which were erected in 1874, continue to be much resorted to by the *adult* male population of the lines; but the females and children still make use of the small privies in the court-yards. Some plots of ground formerly used for the disposal of sewage matter have been dug up and sown with "*ulsee*," the cost being defrayed out of cantonment funds. Conservancy and latrines.

VIII. Water-supply.—There are five wells in the lines which afforded a sufficiency of excellent water all the year. The water is not liable to be contaminated with organic matter or other impurities; it is perhaps a little hard from superabundance of lime, but otherwise seems suitable for cooking and drinking purposes. In my experience there has been no actual scarcity, but the wells are very deep, and in prolonged dry weather the water is many feet (sometimes fifty or sixty) from the surface, and entails much trouble and loss of time on the men to draw it. The wells are all surrounded by a parapet of stone, and furnished with a platform of cross-beams and pulleys to assist in drawing the water. A well is about to be sunk in the regimental bazaar, which will confer a great boon on the inhabitants of the bazaar, as at present they are obliged to fetch their water from a considerable distance. Water-supply.

IX. Diet.—With the single exception of rice, all articles of food have been cheap and abundant during the year; but as rice forms the staple diet of the Madras sepoy, the men have been in receipt of compensation allowance for its dearness almost since the arrival of the Diet.

Digitized by Google

regiment at Nagode. Mutton, ghee, dhal, salt, and other necessaries can be obtained at a reasonable rate, and there is no scarcity of vegetables. Beef is scarce, and, of course, dear; and good fruit is not obtainable. The men generally look well nourished, and cases of underfeeding are not often noticed.

Clothing.

X. Clothing.—The clothing of the men is well suited to the climate, and is made to vary with the season of the year. In the hot months and during the monsoon it is composed almost entirely of light cotton materials, but in the cold weather thick cloth tunics and woollen trowsers are worn; also heavy great coats when on duty at night or in the early morning. These latter are a great comfort to the men, and preserve them from the injurious effects of the cold. The boots in use are made of coarse country leather. The undress clothing worn by the men in the cold weather, in my opinion, is scarcely sufficient for such a climate as that of this station.

Duty and employment.

XI. Duty and employment.—The duties, as a rule, have been light and not injurious to health. They consisted of the usual parades, guard mountings, occasional detachment duty, escorting treasure, escort to the Political Agent, &c., &c. Some of the older men find the running drill rather irksome, and they frequently apply to be excused from it.

Average number of nights in bed 6·20.

Exercises, amusements and occupations.

XII. Exercises, amusements and occupations.—Very few of the men occupy their leisure moments in gardening. Some of the drummers and musicians occasionally go out shooting, and there are several men who are fond of cricket, which taste is encouraged by the European officers. Fishing is practised by a small section, but most of the sepoys, when not on duty, lead a very idle life, and time would seem to hang heavily on their hands.

Marches and service.

XIII. Marches and service.—The regiment has not been on the line of march during the year under review.

Hospital.

XIV. Hospital.—The hospital and its out-houses have been fully described in the report for 1873. The building has been re-thatched and lime-washed twice during the year, repairs have been carefully looked after, and there has been no overcrowding of the wards. The bedding is in good order and sufficient in quantity. The water-supply for the hospital is procured from a well close to the building, the quality has been good, and the quantity sufficient throughout the year. The ventilation and drainage leave nothing to be desired.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the Regiment—

Present	...	...	...	...	654·27
Absent	...	...	...	...	47·78
			Total	...	702·05

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Average daily number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Nagode.	1st January 1875.	31st December 1875.	654·27	361	6	9	55·17	·91	1·37

Number of deaths in hospital 5; out of hospital 1; total 6;				per cent. of total strength	...	·85
„ invalided	...	...	... 20;	„ „	...	2·84
„ sent on sick leave	...	...	... 8;	„ „	...	1·13
„ of days spent in hospital 3295;	per admission 9·12;			per man of total strength	...	4·69
„ „ on sick leave 1087;	per man 135·87;			„ „	...	1·54
Total temporary loss of service per man of total strength					...	6·24

Principal causes of sickness.

XVI. Principal causes of sickness.—As already observed, the year under consideration has on the whole been a healthy one. The total number of admissions was 361, rather more than half of which (197) were for the different varieties of malarious fevers. September and October gave the largest number of admissions, *viz.*, 71 in the former and 63 in the latter month: the average daily sick in these months being 15·90 and 13·87, respectively. November comes next, with 51 admissions and average daily sick 13·86. The chief cause of sickness during the last quarter of the year was undoubtedly owing to the prevalence of the various fever

Fevers.

types of intermittent fever. Of a total of 197 cases of ague, 144 were quotidian, 33 tertian, 3 quartan, and 17 irregular. With very few exceptions, the fever was of a mild character and readily amenable to treatment. Splenic enlargement was a rare sequence, and only in two or three instances was convalescence any way protracted or tedious. A state of anæmia and cachexia was now and then observed to ensue after repeated attacks, but even that condition soon yielded to a generous diet and the preparations of iron. No case of remittent fever came under observation during the year; 19 admissions were due to the different varieties of rheumatism, and, contrary to what might be expected, this affection does not seem to be more frequent in the cold season than at other periods of the year. The cases of rheumatism call for no lengthened remarks. In more than one instance there was a strong suspicion of a syphilitic taint in the system, but exposure of some kind or other was most frequently the exciting

Digitized by Google

cause. General debility caused 16 admissions, a good many of these were old sepoys, who were subsequently brought before the annual medical invaliding committee and pensioned.

Pneumonia.—There were 10 admissions and 3 deaths from this cause. Seven occurred in the cold season, *viz.*, 2 in January, 3 in November, and 2 in December, and the remaining 3 took place in the hot weather. With regard to the 3 fatal cases, 1 occurred in May, 1 in November, and 1 in December. In no instance could any cause beyond exposure of some kind or other be assigned for the disease. The three cases in which there was a fatal termination will be fully detailed under the next heading.

Eye affections.—The various ocular diseases give 18 admissions, *viz.*, conjunctivitis 13, catarrhal ophthalmia 2, pinguecula 1, ulcer of cornea 1, and hordeolum 1. These cases presented nothing of peculiar interest and need not be further considered.

Venereal diseases.—This class of diseases, including gonorrhœa, caused 15 admissions, as follows:—

Primary Syphilis	6
Secondary Syphilis	5
Gonorrhœa	4
Total	15

In one or two of the cases of primary syphilis, the chancres were extremely phagedænic, and it was only by the free application of powerful escharotics that the sloughing was arrested, and the sores made to assume a healthy appearance. The cases of secondary syphilis presented nothing worthy of comment, and the four instances of gonorrhœa were readily cured by astringent injections.

Dysentery.—Three admissions for this disease. They were all treated with large doses of ipecacuanha, and recovered rapidly.

Bronchitis.—There were 3 admissions and 1 death from bronchitis; the admissions for other diseases presented no unusual features, and do not require any special remarks.

XVII. Principal causes of mortality.—Six deaths occurred during the year, 5 of which took place in hospital and 1 out of hospital. The man who died out of hospital had long suffered from chronic bronchitis, and had obtained leave on medical certificate to his native place, Roy Bareilly, where he expired early in January. Of the five deaths in hospital, 1 was due to general debility complicated with bronchitis, 1 to chronic bronchitis, and 3 to pneumonia. Principal causes of mortality.

XVIII. Epidemics.—No epidemics in the regiment during the year. A few sporadic cases of small-pox occurred among the families, but, with one exception, that of a very young infant, they all terminated in recovery. Altogether there were 9 cases, 7 of which were mild and 2 severe. No case of confluent small-pox. Six of those attacked bore marks of vaccination, 5 of whom suffered from the mild form of the disease, and 1 from the severe. Of the 3 unprotected, 2 had mild and 1 severe small-pox. As each case of small-pox occurred, it was immediately removed to a hut set apart for the reception of contagious diseases, and there detained until complete convalescence was established. Epidemics.

Every house in the lines in which a case of small-pox occurred was thoroughly disinfected; the walls scraped and whitewashed, and the floors dug up before the occupants were permitted to return. The clothing of the patients was also either burned or thoroughly purified.

XIX. Vaccination.—In the matter of vaccination very good work has been done this year. The Commanding Officer afforded every facility, and the medical subordinates worked with laudable zeal to complete the vaccination of the regiment, which is now all but accomplished. The total number of fighting men vaccinated was 347, with the following results:— Vaccination.

Successful	213 =	61·38	per cent.
Modified	52 =	14·99	„
Unsuccessful	82 =	23·63	„
Total ...	347	100·00	

Of children under one year, there were vaccinated 61, and of these, 53 or 86·88 per cent. were successful. Of children above one year and others, non-fighting inhabitants of the lines, there were vaccinated 127, and of these, 113 or 88·97 were successful. Total of all ranks and ages vaccinated 535, of which, 379 or 70·84 were successful. These results, I trust, will be considered satisfactory.

XX. Recommendations.—While cholera prevailed in the town of Nagode and its neighbourhood, it was recommended that intercourse with infected localities should be restricted as much as possible. In December it was recommended that, on account of the coldness of the weather, morning parades should not be held earlier than seven o'clock. Both these suggestions were immediately adopted. Recommendations.

XXI. Special observations and remarks.—I have only to add here that the year which has just terminated has been in every respect a remarkably healthy one. Special observations and remarks.

Mr. Ross, Deputy Surgeon-General, Jubbulpore, made his medical and sanitary inspection of this regiment on the 8th November 1875. Inspection.

Digitized by Google

He reports that the lines were as usual very clean; trees which were planted in 1874 were growing nicely; nearly all the streets had stone-paved drains, which in a great measure removes the great defect in all the other regimental lines in his circle, *viz.*, the soakage of the sewage from the court-yards into the ground; these drains were swept twice daily, and were flushed by hand twice a week.

The drainage was very good; conservancy well carried out. There were latrines which were mat enclosures, and one was placed on the flank of each line. Foot sores were pretty frequent, and were caused by ill-fitting boots. Mr. Ross concludes his report by stating that "the inspection was very satisfactory, and reflects credit on the Surgeon of the regiment, Dr. Harvey.

3rd Regiment Bengal Cavalry—Nowgong.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870	Jhelum, December 1868, from Peshawar.	100·2	·65	3·07
1871	Ditto ditto ...	61·6	1·78	2·34
1872	Nowgong, 8th March 1872.	107·9	1·09	5·43
1873	Ditto ditto ...	133·1	·67	4·49
1874	Ditto ditto ...	113·5	·89	3·71
	Average ...	103·26	1·02	3·81
1875	Nowgong ...	119·75	·21	3·43

Medical Officer.

I. Medical Officer.—Surgeon-Major J. J. Clarke, M.D., held charge from 1st January to 31st December 1875, he reports as follows:—

Location and movements.

II. Location and movements.—The regiment stood fast; two full squadrons stationed at Nowgong and a detachment at Nagode, during the past year, until the 22nd of December, when it was suddenly moved towards Lucknow. The detachment marched from Nagode on the 21st and joined the head-quarters, *en route* to Lucknow, at Banda on the 27th December.

Topography.

III. Topography, &c.—Already the topography of the old and new cantonments of Nowgong has been fully described in previous reports. I may, however, observe that the four sanitary defects of the garrison to which I drew attention last year are being remedied. 1st, the Dhorea Nullah is now being bridged, and, when the work is completed, the process of straightening and cleansing the nullah is to be carried out. 2nd, covered public latrines are to be built before the rains. 3rd, the village of Dudree has been cleared away. 4th, the drainage of the sudder bazaar has been extended.

Meteorology.

IV. Meteorology.—Under the head of meteorology there was nothing of unusual interest. The rains are said to have set in late, not until the 23rd June, and at the end of this month but 2½ inches of rain had fallen; in July only 3 or 4 inches of rain fell, but during the last four days of the rains some 18 inches were registered.

Lines and huts.

V. Lines and huts.—Attention has been repeatedly drawn to the contracted area of the lines and the consequent overcrowding of the huts. I have in my appended report on the cholera outbreak again fully alluded to this subject.

Marches.

XIII. Marches.—The regiment towards the end of December was suddenly placed under orders to march to Lucknow; the head-quarters proceeded from Nowgong on the 22nd, and the detachment from Nagode on the 21st of the month. Each met the other at Banda on the 27th. From Banda the regiment marched to the Chillitara Ghât and Aong to Cawnpore, where it halted for six days, a squadron being detached and sent to Onao for three days as escort to His Royal Highness the Prince of Wales during a pig-sticking expedition in the Onao District. The men enjoyed good health during the march. On the 15th of January 1876 the regiment entered Lucknow, its destination in course of relief.

Hospital.

XIV. Hospital.—Fully detailed last year.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	371·62
Absent	83·99
Total	455·61

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Total per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters, Nowgong, and on line of march.	1st January 1875.	31st December 1875.	284·51	361	1	10·51	126·88	·35	3·69
Detachment, Nagode, and on line of march.	Ditto ...	26th December 1875	87·11	843	...	2·24	97·49	...	2·57
Total ...	... ...	... ...	371·62	445	1	12·75	119·75	·26	3·43

Number of deaths in hospital 1;	out of hospital none;	total 1;	per cent of total strength ...	·21
„ invalided		17;	„ „ ...	3·73
„ sent on sick leave		2;	„ „ ...	·43
„ of days spent in hospital 4657;	per admission 10·46;		per man of total strength ...	10·22
„ „ „ on sick leave 283;	per man ... 141·50;		„ „ ...	·62
		Total temporary loss of service per man of total strength ...		10·84
		Average number of continuous nights in bed ...		11·37

The health of the regiment has been very fairly good throughout the whole year, and contrasts favorably with the past four years. There has been no unusual outbreak of sickness, except cholera. A troublesome and rather obstinate ulcer, appearing chiefly at the ankle or heel, attacked some 15 or 16 of the men during the rainy season. In most instances the ulcer seemed to originate from a boot or shoe rub, or abrasion from accident on parade or otherwise. In some few no apparent cause could be traced. The ulcer of circular form and elevated edges, with a flabby, unhealthy centre, was difficult to manage; strapping, blisters, and stimulating applications were in turn tried, and all, in some few cases, seemed to fail; for the cases lingered on until the regiment marched towards Lucknow, when the change of air acted most beneficially. The mortality in the whole regiment during the past year has been very low, only one case of death, and that one from cholera in hospital. Seventeen men were invalided. Cholera.

XVI. Principal causes of sickness.—The principal causes of sickness may all be enumerated under five heads—ague 178 cases; bowel complaints (chiefly dysentery of a mild type) 29 cases; abscesses 20 cases; ulcers 35 cases; contusions, &c, &c., 95 cases; and these three last, showing a total of 150 cases, may be almost entirely classed under the term "accident;" for by far the majority of the ulcers and abscesses arose from contusions or abrasions on parade, thus reducing the number of heads to three, *viz.*, ague, bowel complaints, accidents, which embrace a total of 357 cases; three-fourths of the total number treated. Principal causes of sickness.

XVII. Causes of mortality.—One fatal case from cholera is the only death reported in the whole regiment during the past year. Causes of mortality.

XVIII. Epidemics.—The invasion of cholera during the autumnal months is fully detailed in the report appended. Epidemics.

XIX. Vaccination.—There were thirteen children in the lines successfully vaccinated. The men of the regiment have, with few exceptions, suffered from small-pox, and those few have been vaccinated. Vaccination.

XX. Recommendations.—All such recommendations as I have made have been from time to time carried out, and every aid was afforded me by the regimental authorities during the outbreak of cholera. Recommendations.

The medical and sanitary inspection of this regiment was made by Deputy Surgeon-General Ross, of the Jubbulpore Circle, on the 15th November 1875. Inspection.

He reports that the lines were much improved by the demolition of the village of Dodrie, which encroached on one flank; the horse lines were very much improved, and things were looking much more in order. The men's huts were small and overcrowded, as two squadrons occupied a space really hardly big enough for more than one. Drainage, both natural and artificial, was good. The latrine system was well and strictly carried out. The inspection is stated by the Deputy Surgeon-General to have been thoroughly satisfactory.

Detachment 3rd Bengal Cavalry—Nagode.

Mr. Ross, Deputy Surgeon-General of the Jubbulpore Circle, inspected this detachment on the 8th November 1875. He reports that there was no change in these lines since last report; the men were seen at stables, and looked healthy and strong; the lines were clean, and all conservancy and latrine Inspection.

Digitized by Google

arrangements were satisfactory; the stable litter is taken away from the lines and burnt.

20th Regiment Madras Native Infantry—Nowgong.

Surgeon A. A. Thomas, Madras Medical Service, furnishes the annual sanitary report of the regiment.

Medical charge.

I. Medical Officers who have held charge of the Right Wing, 20th Madras Native Infantry, during the year 1875.—Surgeon Joseph Backhouse, Madras Medical Service, assumed charge of the wing on the 13th March 1874 from 1st class Assistant Apothecary J. Walker, Madras Medical Subordinate, and continued in charge until 14th October 1875. Surgeon-Major J. J. Clarke, 3rd Bengal Cavalry, then assumed temporary charge, from 14th to 25th October 1875, when he was relieved by Surgeon A. A. Thomas.

Location and movements.

II. Location and movements.—The wing has been stationed at Nowgong during the entire year; no movements have taken place and no detachments have been furnished. Two companies arrived from Sitabuldi, Central Provinces, on the 5th January 1874; the remaining two companies arrived from Sironcha and Chanda, Central Provinces, on the 10th March 1874, thus completing the wing.

Topography and physical geography.

III. Topography and physical geography of the surrounding country and station.—Nowgong is situated in latitude 25°3'30", longitude 79°31'0", and is about 700 ft. above sea-level. The soil is for the greater part "black cotton" with some sand-stone; masses of dark-coloured granite crop up here and there, and low hills of white granite with bright crystalline fracture closely resembling marble in its structure.

The station is, as it were, situated on an undulating plain, surrounded by a range of low sharp-browed hills composed of granite. Within a radius of seven miles from the cantonment there are several pretty artificial lakes, 3 or 4 of tolerably large size; there is little or no swampy ground in the neighbourhood of these lakes, or, indeed, anywhere in the vicinity of the station.

The station may be said to consist of two parts—the old cantonment and the new cantonment. *The old cantonment*, which has been occupied for a number of years, is the only well-wooded portion of the station. It comprises the cavalry lines (occupied by the 3rd Bengal Cavalry) and its bazar, commissariat godowns, infantry lines (occupied by right wing, 20th Madras Native Infantry) and its bazar, the agency, jail, cutcherry, &c., officers' bungalows, cavalry, infantry, artillery and agency, hospitals, and sudder bazar. On the north-east of the old cantonment is the Koomraree Nuddee; on the south-west, behind the sudder bazar, runs the Dhorea Nuddee. The drainage is into these nuddees.

New cantonment.

The new cantonment is about 1¼ miles distant in a south-westerly direction from the old cantonment. It is occupied by the European troops, *i. e.*, one Battery of Artillery, 8th Royal Artillery, and two companies of 63rd European Infantry. It presents a bare, forlorn aspect, the few trees that have been planted being of small size, and several of the barracks in an unfinished state. The drainage takes place into the Seelap Nuddee situated to the south-west of this cantonment.

Improvements.

The station has undergone several improvements during the year: a number of new pucka drains have been laid down, several old houses in the sudder bazar pulled down, and a bridge is to be constructed over the Dhorea Nuddee. The small village of Dudree that was situated in very close proximity to the cavalry lines, and the sanitary arrangements of which were very bad, has been purchased by Government; the houses pulled down and site ploughed over.

Meteorology and climate.

IV. Meteorology and climate.—From information gathered, I am enabled to state that neither heat nor rain-fall have been excessive during the year. The rains were, however, peculiar, in that the heavy falls all occured in one month (July).

Lines, barracks or huts.

V. Lines, barracks or huts.—The lines are built on slightly sloping ground at north-east end of the old cantonment. They consist of parallel rows of double huts with bye-streets running from north to south, intersected by a main-road running from east to west.

Position.

The huts of each row are placed back to back, not as in Madras lines with an interval between the backs of the houses, but there is a single partition wall separating them, the roof being continuous over the whole row of huts, its highest point over the separation wall.

Disposition.

The huts face east to west.

Surroundings.

On the west of the lines are the Cantonment Magistrate's and Agency bungalows, both with well-wooded compounds; on the north-east and east, open ground, that nearest the lines being used as the parade ground of the regiment.

Construction.

In front of each hut is an enclosure 20 feet broad, 11 feet 7 inches long, shut in by a kutcha wall 5 feet 3 inches high; a private latrine is built in a corner of this enclosure for the use of the sepoys' women and children.

The hut itself is divided into two rooms—(1) a back-room, used for sleeping and living, in length 20', breadth 11'4", mean height (sloping roof) 10'; (2) front room, used for cooking and household purposes 20'×4'8".

Digitized by Google

All ventilation takes place through the doorways, except in the end houses, which are provided in addition with an opening 1′6″ × 1′ in their outer wall. Ventilation.

The lines are the best of their kind that I have ever seen. The huts are in good repair and look roomy. There are 325 huts in the lines, of these 309 are at present occupied. Total number of occupants 1,069 (men 342, women 287, children 440), thus giving 3·45 as the average number of occupants of each occupied hut. Lines, huts, &c.

Number of huts in the lines.	Occupied huts.	Number of occupants.	Measurements of a hut.					Superficial area per man.	Cubic space per man.
			Length.	Breadth.	Mean height.	Superficial area.	Cubic space.		
325	309	1069	20 ft.	16 ft.	10 ft.	320	3,200	92·75	927·53

VI. Drainage of the station and lines.—The drainage of the station is by surface drains. During the year about one-third of the drains in the sudder bazaar have been made pucka of brick and mortar, the remainder are surface drains of varying size and depth; these drains empty themselves into the Dhorea Nuddee which runs on the west side of this bazar. The drainage of the lines is carried out by shallow surface drains in front of the rows of huts; these drains run into a larger surface drain on each side of the main road; if the quantity of water is small, it soon becomes absorbed, but in the rainy season these latter drains discharge their contents across the parade ground into the Koomraree Nuddee. This nuddee also receives the drainage of the cavalry lines and commissariat godowns. The Koomraree and Dhorea Nuddees join the Bhanran Nuddee, which empties itself into the Dessam River. The Seelap Nuddee, which receives the drainage of the new cantonment, also empties itself into the Dessam River. Thus the whole drainage of the station is into the Dessam River. The drainage of the station even through the rainy season is said to be very good. Drainage of the station and lines.

VII. Conservancy and latrines—There are no regimental latrines, and consequently the men either use the private latrines, or resort to the fields and nullahs for necessary purposes; the women and children make use of the small latrine which is to be found in the court-yard of each hut, and the night soil is removed from it twice daily and buried in trenches about 120 yards distant from the lines. Cultivation has been carried out over the site of the older trenches, but the resulting crops were indifferent. Conservancy and latrines.

The water-supply was from wells, and was abundant and of good quality; to two of the wells are attached troughs for the purpose of watering and washing animals, and a coping round each well prevents the return of refusewater. Water-supply.

IX. Diet.—The regimental bazaar is described as being small, clean, and supplied with articles of fairly good quality, but the sepoys mostly purchase their supplies in the sudder bazar where they are able to make better bargains. As a rule, the men are well fed and well nourished, and as rice is their staple article of diet, each man receives Rs. 3 per mensem as "rice compensation money." The average daily cost of an unmarried sepoy's diet is but one anna. Diet.

The regimental clothing seems to be well suited to the climate and to the duties the men have to perform, but the undress clothing is considered to be much too thin for wear during the cold-weather months. Clothing.

As the sepoys purchase their own boots, which, as a rule, are ill fitting and made of country leather, it is not surprising that, when worn without socks, as is generally the case, cases of "blisters of the feet" have been very common. Boots.

The duties consisted of the usual regimental and brigade parades, regimental and station guards, route marches occasionally, and a guard with the Political Agent on the occasion of his making his tour through the district. Duties.

The men have had but an average of 3·25 nights in bed, and the medical officer addressed the commanding officer on this point.

A few of the men indulge in shooting and fishing, and attempts at gardening were noticed.

XIV. Hospital.—The hospital is built on slightly elevated ground towards the north-west end of the old cantonment. The ground slopes gradually towards the east and west. The drainage on the east side takes place into the Dhorea Nuddee, which runs about 50 yards distant, on the west, into a side-road drain. Hospital.

On the north and west are open grounds; on the south (at some little distance) is the sudder bazar and civil hospital; on the eastis the cantonment.

Digitized by Google

The lines are about 150 yards distant from the hospital. The hospital building consists of one long ward 113'×20'×18' mean height (sloping roof), superficial area 2,260, cubic space 40,680. Two enclosed verandahs on either side of the ward, each 113'×10'×11' mean height, superficial area 1,130, cubic space 12,430. They are separated from the ward by kutcha walls 15 feet high, reaching to the roof, and each communicates with the ward by 15 archways, 8 of which on both sides are closed by a wall reaching to a height of 5 feet from the floor. They each communicate with the external air by seven latticed doors 7' 3"×4' 6" placed opposite to the seven open archways. A portion of each end of the hospital is allotted to entrances, offices and store-rooms; at the northern end are two rooms (10'×10'), in one, hospital bedding and necessaries are kept, in the other, firewood and old timber. At the southern end are two rooms (10'×10'), one used as an office-room, the other for dispensing medicines in. One end of the left-hand side verandah has been walled off for use as a bath-room. The ward contains 30 beds; the verandah could be used as wards on an emergency, and would be capable of holding 15 beds each. I have isolated cases of conjunctivitis by placing their beds in the verandah.

Ventilation.

Ventilation.—The ventilation is by perflation through 16 latticed doors (one at either end, and 7 on each side of hospital building) and 16 open archways placed opposite to the doors and to each other and communicating with the long centre ward. Ventilation is extremely free.

Out-houses.

Out-houses—(1).—A latrine, about 10 yards from the northern end of the hospital. The latrine is a kutcha building with tiled roofing; internally are 3 sub-divisions, each sub-division provided with two gumlahs half-filled with dry-earth for the reception of the solid and liquid excreta. In front of the sub-divisions is a narrow paved pathway, at the far end of this pathway is a chatty containing water; here the men perform their after ablutions, the foul water running into a chatty sunk into the ground just outside the latrine wall. The excreta from the latrine is deposited in two iron receptacles, the contents of which are taken away daily by station conservancy carts. In juxtaposition to the latrine is a small room used for the storage of dry-earth. The latrine is always kept clean and swept; dry-earth is liberally used.

(2).—House occupied by hospital assistant.

(3).—A small thatched house built by the sweeper, with a small vegetable garden in front of it.

(4).—An out-house; at present occupied by the dooly bearers.

Water-supply.

Water-supply.—The water-supply of the hospital is obtained from a pucka well in the compound. The supply is abundant and the quality of the water very good.

Hospital.

State of repair.—The hospital used to be of kutcha make throughout, but during the year the outer walls have been made pucka of red brick and mortar; new doors have been put up fresh tiles put on, and 6 glass-windows placed in the east wall of the building. The roofing consists of bamboo rafters, a layer of bamboo matting, and a double layer of tiles slopped with chunam. The site is everything that could be desired; the ground on which it stands is slightly elevated, with good drainage on all sides. It has open country on three sides, is not inconveniently near to any officer's bungalow or to the sudder bazar, and is only 150 yards from the regimental lines. The accommodation is ample for a wing of a native regiment, and overcrowding is hardly ever likely to take place. The ventilation is remarkably good. With the exception of blankets, the hospital bedding and furniture are ample for all wants; a few more blankets are, however, badly needed during the colder months. There are only six Europe blankets and two country in store, and the average daily number of patients during the months of October, November and December have been 13·87, 10·36, and 11·29 respectively Average daily sick for the year 19·68.

Accommodation.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the right wing, 20th Madras. Native Infantry—

Present	...	...	...	...	283·25
Absent	...	...	...	...	63·72
Total	...	...			346·97

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Right Wing, 20th Madras Native Infantry, at Nowgong, Bundelkhund.	1st January 1875	31st December 1875.	283·25	572	1	19·68	201·94	·35	6·94

Number of deaths in hospital 1; out of hospital 1; total	2; per cent. of total strength	...	·57
„ invalided	10; „ „	...	2·88
„ sent on sick leave	5; „ „	...	1·76
„ days spent in hospital 7183·20; per admission 12·55; per man of total strength		...	20·70
„ „ „ on sick leave 2,243; per man 448·68; „ „		...	6·46
Total temporary loss of service per man of total strength		...	27·16

Digitized by Google

XVI. Principal causes of sickness.—Quotidian ague and hypertrophied spleen. Quotidian ague caused 226 out of a total of 572 admissions during the year. The greatest number of admissions for this disease, placed in their numerical order, occurred during the months of September 38, August 36, May 26, June 25, July 17. Principal causes of sickness.

Conjunctivitis.—This disease was also most prevalent during the hot weather and rains. I am unable to assign any cause for its prevalence. Conjunctivitis.

Chronic Rheumatism.—Is, I believe, a very common complaint in the district of Bundelkhund. The greatest number of cases occur during the cold season, and at the drying up of the rains; causes cold and damp. The men of the 20th Madras Native Infantry may be considered as particularly predisposed to this disease, from the fact that when ordered to march from Sitabuldi, Central Provinces, to Nowgong, they had only just recovered from an epidemic of dengue, which disease invariably gives rise to rheumatic sequelæ. Chronic Rheumatism.

Blister feet.—Twenty cases of blister feet were admitted during the year; these were only the severer cases that required treatment in hospital. Sixty-three cases were so slight as not to require admission into hospital, and were treated by simply giving three or four days "boots' excuse." Total number of blister feet during the year was 83. Blister feet.

General debility.—The 20th Madras Native Infantry has been unfortunate in the stations it has occupied during the last 15 years. At the Straits the men suffered from fevers and rheumatism; at Bellary, one of the hottest stations in the Madras Presidency, they also suffered from fevers and rheumatism; at Sitabuldi, Nagpore, Central Provinces, they suffered from an epidemic of dengue, and now at Nowgong, Bundelkhund, they are subjected to greater variations of temperature than they have hitherto been accustomed to. The greater number of men who present themselves at hospital are in a thin, anæmic, debilitated condition, requiring a long rest in hospital and tonic stimulating treatment. Nine cases of "simple general debility" have been treated during the year; out of these one has been "pensioned" and one sent on "nine months' sick leave." General debility.

XVII. Principal causes of mortality.—Two men died during the year, one on the 18th June from "sunstroke," the other on the 28th August from "malignant cholera." Princip causes of mortality.

XVIII. Epidemics.—For the first time, for several years, a serious epidemic of cholera broke out within the cantonment of Nowgong, Bundelkhund. The first case occurred on the 27th July and the last on the 4th October 1875. Eighty-nine cases in all occured, of these, 49 proved fatal. For two months previous to its appearance here, cholera had been prevalent in the Banda and Chutterpur Districts. The disease appeared to exercise a kind of selection as to the villages attacked, passing by several large insanitary villages and attacking smaller and better cared-for places. Epidemics.

Outbreak, the first case—Occurred on the 27th July; the sufferer was a native—a "Fukeer"—who had come from Punnah to Nowgong *viâ* Chutterpur (where cholera had been rife since the 11th July). This man died on the 27th July, on the edge of the cantonment boundary, close to the lines of the 20th Madras Native Infantry. The second case occurred in the sudder bazar on the 28th July. Outbreak.

Sudder Bazar.—On the 26th July, a lohar misteri, living in the village of Bilhari, which is situated on the south-east of the cantonment, in close proximity to the 3rd Bengal Cavalry lines, was suddenly attacked with purging and vomiting, and died the same evening. An uncle of his (also a lohar misteri) living in the sudder bazar, Nowgong, attended the burning ceremony and afterwards slept in the deceased's house. On his return home on the 28th July he was attacked with cholera and died. This was the second case. The last case in the sudder bazar occurred on the 15th September 1875. Total number attacked 63; deaths 32. Three grass-huts, each 30′ × 13′ × 8′, and each capable of accommodating eight patients, were erected outside the sudder bazar on the far side of the Dhorea Nuddee; here all cases were treated. The huts, bedding and furniture were subsequently burnt. Sudder Bazar.

20th Madras Native Infantry.—A boy living in the Madras regimental bazar was attacked on the 10th August, and died on the 14th August. This was the first case in these lines. Eleven cases in all occurred in the Madras lines; of these eight proved fatal. One sepoy only was attacked and died, the remainder were camp-followers. The first case was attacked on the 10th August, the last on the 17th September. The regimental bazar is situated at the north-west end of the lines. There are 325 huts in the lines; only the occupants of ten huts suffered. All the cases of cholera that occurred in the Madras lines were confined to the inhabitants of the bazar and adjacent line-huts. 20th Madras Native Infantry.

Precautions.—The sepoys and their families were prohibited from going into the sudder bazar while cholera was prevalent there. The line bazar shop-keepers, however, were allowed to visit the sudder bazar to make purchases to replenish their stock-in-trade. I have no doubt but that cholera was thus introduced into the Madras lines, and, as before related, localized itself in the bazar. The sepoy who was attacked and died was treated in a tent pitched on the north-east of the lines; the other cases (principally women and children) were treated in their own huts. Precautions. Introduction.

Purification of huts.—The floorings of the infected huts were dug up to a depth of 6 inches; the contaminated earth carted to a distance and buried, and fresh earth put in its place; the walls scraped and leeped, and the huts fumigated. There was nothing peculiar in the construction or ventilation of the infected huts, nor any noticeable sanitary defects in the portion of the lines attacked. Purification of huts.

XIX. Vaccination.—Sixty-four childeren living in the lines of the right wing, 20th Madras Native Infantry, were vaccinated during the year. From a personal examination Vaccination.

Digitized by Google

of the resulting vesicles and scars, I am enabled to state that the operation has been successfully performed in all these cases. No sepoys or recruits have required vaccination. I consider the regiment to be well protected from small-pox.

Recommendations made during the year.

XX. Recommendations made during the year.—Deputy Surgeon-General Ross at his last inspection, and I believe also at the inspection of last year, recommended that a "public latrine" should be erected in the neighbourhood of the lines for the use of the men and followers; the subject is, I believe, still under the consideration of the proper authorities.

Special observations and remarks.

XXI. Special observations and remarks.—This is the second year that the right wing, 20th Madras Native Infantry, has been stationed at Nowgong, Bundelkhund. During the first year, being unaccustomed to so cold a climate, they suffered severely from fevers and rheumatism. The men have now, however, become somewhat acclimatised, as is shewn by the marked diminution in the number of fever cases as compared with last year. The climate of Nowgong is considered a healthy one, and when the men are better acclimatized, and have provided themselves with warmer private clothing for the colder months, I believe the cold will exercise a beneficial bracing effect. With regard to the large percentage of shoebites and footsoreness that have occurred during the year, I do not believe that this curse of the Native Army will ever be materially diminished until Government either permits the sepoy to wear sandals, or supplies him with good socks and properly-fitting boots.

Inspection.

Inspected by the Deputy Sureon-General of the Jubbulpore Circle on the 15th November 1875. He reports that the lines were airy and spacious; the drainage, artificial and natural, was good.

All the men use their private latrines in their hut enclosures, and this system is about as objectionable as well can be imagined. The hospital had been altered since the last inspection. All the hospital details for the comfort and proper treatment of the sick were in a satisfactory condition.

RAJPOOTANA.

(INCLUDING THE STATIONS OF DEOLEE AND ERINPOORAH.)

Average strength present during the year ...	Cavalry	374;	Infantry	1399·9
Average daily sick per cent. of average strength	„	5·11	„	3 56
Rates of mortality per cent. of average strength	„	1·79	„	·86

9th Regiment Bengal Cavalry—Deolee.

Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870	Rawalpindi, November 1870	99·7	1	5·1
1871	Ditto ditto ...	80·1	2·4	4
1872	Ditto ditto ..	65·9	1·1	4
1873	Ditto ditto ...	81·9	·6	2·5
1874	Deolee, January 1874...	126·1	·2	5·2
	Average ...	90·74	1·06	4·16
1875	Deolee	103·74	1·71	5·10

I. Medical Officers.—The medical charge of the head-quarters of the 9th Bengal Cavalry was held by Surgeon-Major R. Mantell, from the 1st January to the 15th April, and from the 16th October to the 31st December 1875, and in the intervening period, *viz.*, from 16th April to 15th October, by Surgeon Macdonald.

A squadron at Jhansi was in medical charge of Surgeons Linton and Macgregor, from 1st January to 12th February; Surgeon Hall from 13th February to 30th July, and Surgeon Wright from 31st July to the end of the year. A detachment at Sambhur was in medical charge of hospital assistant Syeednoor Khan from 1st January to 18th December, and a detachment, which marched to Oodeypore, was in charge of 4th class native doctor Ameer Buksh of the Mairwarrah Battalion.

Surgeon-Major R. Mantell has submitted the sanitary report for 1875.

Location and movements of the regiment.

II. Location and movements of the regiment.—The head-quarters of the regiment remained at Deolee during the whole year: and the Jhansi detachment was not relieved. The detachment at Sambhur was absent from the 1st January to the 18th December, when it returned to head-quarters, being relieved once only during the year. The Oodeypore detachment marched on the 26th October and returned on the 10th December.

Digitized by Google

III. *Topography.*—Described in last year's report. The climate of Deolee during the past year was much the same as has been previously noted, that is to say, the temperature was more equable than in northern stations; changes were neither frequent nor too severe, and there was less variation between the temperature of the night and day. Of really cold weather, there was very little. Hoar frost appeared on the ground during three or four mornings only in January. The hot season set in early, but was not severe. Taking all the seasons together, the climate at Deolee, though somewhat relaxing, and, therefore, not agreeing with all, should have been favorable to most, and would, I think, have been even more healthful than most of the stations of the plains, had there not been a contrary cause, which will be treated of in para. XXI of this report. Topography.

The fall of rain was rather less than usual, and somewhat irregular. About 31 inches fell during the year, *viz.* :—

Up to end of June	3	Inches.
„ In July	8	„
„ In August	4	„
„ In „	16	„

V. Lines, &c.—The remarks made in the sanitary report for 1874 regarding the lines, conservancy and latrines, drainage, water-supply, diet, clothing and duties, will apply to the year under review, with the exception that the regimental latrine which was applied for has not been erected, and the conservancy arrangements generally are said to be defective. Lines, &c.

XIV. Hospital.—The hospital was described in the report for 1874; it is all that could be desired, but leakage through the roof was rather troublesome during the rains of 1875. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	374
Absent	72
Total	466

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Per cent. of strength per annum. Deaths.	Per cent. of strength per annum. Daily average sick.
Head-quarters at Deolee ...	1st Jan. 1875	31st Dec. 1875	198	174	5	10 9	87·8	2·5	5·5
Detachment at Jhansi ...	Ditto	Ditto	122	156	...	5·4	127·8	...	4·4
Ditto Sambhur ...	Ditto	18th Dec. 1875	44	46	1	2·5	108·4	2·3	5·6
Ditto march to Oodeypore...	26th Oct. 1875	10th Dec. 1875	92	12	...	2·2	104·3	...	2·3
Total ...	...	...	374	388	6	19·1	103·74	1·60	5·10

Number of deaths in hospital 6; out of hospital 2; total	8;	per cent. of total strength	...	1·71
„ invalided	22;	„ „	...	4·7
„ sent on sick leave...	13;	„ „	...	2·7
„ of days spent in hospital 6,993; per admission	18;	per man of total strength	...	15·
„ „ on sick leave 2,205; per man	169;	„ „	...	4·7
Total temporary loss of service per man of total strength			...	19·7

XVI. Principal causes of sickness.—Sickness in the regiment was less in 1875 than during the previous year In 1874 there were 469 admissions, in 1875 there were 388 admissions. Intermittent fever was the cause of nearly one-half the admissions, but was not so prevalent as the year before. In other respects there was no special cause of disease, and cases, the result of accidents, were much the same in either year, yielding about 15 per cent. of admissions. There were 15 admissions only from venereal disease. Principal causes of sickness.

XVII. Principal causes of mortality.—Eight deaths occurred during the year, or 1·7 per cent. of the strength of the regiment. Of these, two resulted from dysentery—one at Deolee, the other at Sambhur; two old men died, one from diarrhœa, the other from bronchitis; one man was brought to hospital in a moribund condition, having contracted continued fever on his return from furlough, and died; another man was also brought to Deolee from Sambhur in a dying condition, after an attack of acute hepatitis. Of the two deaths which are recorded as having taken place "out of hospital," one was ascribed to apoplexy at Sambhur, and the other to an unknown cause, the man being on furlough. Principal causes of mortality.

XVIII. Epidemics.—None. Epidemics.

XIX. Vaccination.—None of the men were vaccinated; all the recruits received bore evident marks of having had small-pox. Vaccination.

XX. Recommendations.—None. Recommendations.

Digitized by Google

Special observations.

XXI. Special observations.—In my report for 1874 I dwelt upon the fact, that the causation of fever at Deolee might, very possibly, be attributed in a great measure to the want of shelter by trees or verandahs in the lines of the regiment. That same condition equally applies to 1875. As regards Jhansi and Sambhur, I am unable to form an opinion, as both places are unknown to me. With reference, however, to Deolee, there is a subject worthy of consideration which may account for the higher rate of sickness and the greater daily average sick in hospital than has been the case for some years before the regiment came here, premising that there are no apparent external causes of disease, that is to say, there are no low jungles or marshes; the drainage is good, soil dry, no great variations in temperature, water good, food good and plentiful. The duties have not been heavy, and the men have been well clothed. Yet, in comparing this station with the one previously occupied, *viz.*, Pindi, there is a marked difference in the sick-rate per cent. of men actually present; for, whereas in Pindi it amounted to 2·4, in Deolee last year it was 5·5 per cent. In one way only, in addition to what I have already remarked, can this be accounted for, *viz.*, in the insanitary condition of the station and its surroundings. There are no latrines, and the conservancy arrangements are very defective. The cantonment itself is small, the lands of native states enclosing it on all sides. Sentries are posted at certain points of the boundary of cantonments, morning and evening, in order to enforce the order that all natives shall go outside the boundary for purposes of nature. In spite of what may be thought to the contrary, the immediate neighbourhood of cantonment on most sides is often offensive in the extreme. As this system has now been in practice 18 years, the ground has become polluted, and it is scarcely a new idea to imagine that this pollution of the soil, under climatic influences, produces a contamination of the air which may, and surely does, give rise to such effects upon all constitutions, under its influence, as to render them more prone to disease, and less amenable to treatment. In this way only is it accountable that in this station, which should be very healthy, admissions into hospital have been numerous and the sick-rate high.

Twenty-two men were invalided for discharge, 75 or 4·7 per cent. of the whole strength. It must be borne in mind, however, that this regiment was enlisted for the mutiny, and that many men were taken at an advanced age. Out of the 22, seventeen were discharged on account of old age; one man also enlisted in 1857, was discharged on account of obesity, which unfitted him for riding. Two men were invalided in consequence of injuries received on parade; one on account of enlargement of the spleen, and another with chronic rheumatism. Thirty-one recruits were received during the year of a fair average stamp, of whom, however, five were subsequently discharged by the commanding officer as unlikely to make good soldiers, and a sixth man was struck off for bad conduct.

Deolee Irregular Force—Deolee.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Deolee ...	177·3	1·1	6·3
1871 ...	Do. ...	130·9	1·2	4·4
1872 ...	Do. ...	100·1	1·4	5·1
1873 ...	Do. ...	95·8	1	4·6
1874 ...	Do. ...	112·6	1·4	4·1
	Average ...	123 34	1·52	4·9
1875 ...	Deolee ...	117·57	·57	4·52

Medical Officers.

Surgeon-Major F. W. A. DeFabeck has submitted the annual sanitary report, from which the following information has been obtained.

I. Medical Officers.—Surgeon-Major F. W. A. DeFabeck from 1st January to 14th April 1875. Surgeon D. P. MacDonald from 15th April to 13th December, during the absence of the former on sick leave.

Location and movements.

II. Location and movements.—Head-quarters at Deolee during the whole year.

Detachment as follows:—

Destination.	Date of departure.	Date of rejoining.
Jeypoor	22nd September 1874 ...	20th April 1875.
Agent, Governor General's Escort ...	26th „ „ ...	16th March „
Beekaneer	25th October „ ...	2nd May „
Kotah	16th November „ ...	10th June „
Bhurtpoor	4th December „ ...	15th April „
Beekaneer	25th March 1875 ...	28th November „
Bhurtpoor	27th „ „ ...	.....
Jeypoor	7th April „ ...	4th December 1875.
Kotah	30th July „ ...	30th October „
Agent, Governor General's Escort ...	20th December „	.....
Jeypoor	30th November „ ...	.....
Bhurtpoor	26th December „ ...	.....

Digitized by Google

The topography of Deolee has been described in previous reports. Of the meteorology of the year it is only necessary to say that the average mean temperature and the rain-fall were about the average of former years. Topography.

The lines are described as being commodious and well kept, and their drainage was excellent. Lines.

The conservancy, water-supply, diet and clothing require no special remarks. Conservancy, water-supply, &c.

The duty was not excessive in any way; the men continue to learn and to practise the construction of useful and ornamental works about the station. Duty.

The force has not moved from head-quarters during the year.

XIV. Hospital.—Full descriptions have been given in previous reports of the construction of the hospital, which is roomy and commodious, well lighted and ventilated, and leaves little to be desired beyond a mode of roofing more capable of resisting rain. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	... 683
Absent	... 192·6
Total ...	... 875·6

Station.	Period. From	Period. To	Strength.	Total number of: Admissions.	Total number of: Deaths.	Daily average number of sick.	Per cent. of strength per annum: Admissions.	Per cent. of strength per annum: Deaths.	Per cent. of strength per annum: Daily average sick.
Head-quarters at Deolee ...	1st January 1875...	31st December 1875	339	532	2	21·85	156·9	·58	6·44
Detachment at Jeypore ...	Ditto	Ditto	60	84	1	3·75	140	1·6	6·25
„ Bhurtpore ...	Ditto	Ditto	35	39	...	1·40	111·42	...	4
„ Beekaneer ...	25th June 1875 ...	Ditto	42	42	...	1·27	192·10	...	3·02
„ Kotah ...	Ditto	Ditto	77	70	...	1·72	174·62	...	2·23
„ with A., G. G.	1st January 1875...	9th March 1875 ...	161	36	...	0·88	102·82	...	0·54
„ with do. do.	25th December 1875	31st December 1875							
Total ...	.....	.....	683	803	3	30·86	117·57	·44	4·52

Number of deaths in hospital 3; out of hospital 2; total 5; per cent. of total strength	...	·57
„ invalided ... . none; „ „ ...	...	none.
„ sent on sick leave ... ... 5; „ „ ...	...	·57
„ of days spent in hospital 112·64; per admission 14·02; per man of total strength	...	12·86
„ „ „ on sick leave 501; per man ... 100·2; „ „ ...	...	·57
Total temporary loss of service per man of total strength ...	...	13·43

The number of admissions is 803, being 75 more than in the last year. The mortality during the year has been three, this number being six less than in the year 1874. No men were invalided during the year. Principal causes of sickness.

XVI. Principal causes of sickness.—Intermittent fever, as usual, has sent the largest number of men to hospital. The proportion to total admissions, however, is considerably less than it was in 1874.

The comparison is as follows:—

Year	Total admissions	Intermittent fever.
1874	728	218
1875	803	193

The malady which stands second on the list in point of numbers is conjunctivitis, of which 72 admissions are recorded. The other diseases which bear a high admission list are unimportant. Cases of chest affection have been on the decrease.

XVII. Principal causes of mortality.—Only five deaths occurred during the year, and of these, two were out of hospital, and one was in the detachment hospital at Jeypore. Two men died of pneumonia, one of phthisis pulmonalis, one of anæmia, and one of small-pox. Principal causes of mortality.

Digitized by Google

Erinpoorah Irregular Force—Erinpoorah.

Surgeon S. Brereton reports as follows :—

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870	Erinpoorah ...	68·8	·7	2·8
1871	Ditto ...	47·8	1·3	2·2
1872	Ditto ...	82·9	·8	2·5
1873	Ditto ...	65·1	·4	2·4
1874	Ditto ...	89·7	1·1	2·8
	Average ...	70·86	·86	2·54
1875	Erinpoorah ...	85·90	1·14	2·60

Medical Officers.

I. Medical Officers.—Surgeon H. D. S. Compigné was in medical charge from 1st January to 31st March. 3rd Class Hospital Assistant Mahomat Fakir, from 31st March to the 11th July, and Surgeon S. Brereton, from 11th July to 31st December.

Location and movements.

II. Location and movements.—The head-quarters are permanently stationed at Erinpoorah; one detachment, average strength 72, was at Aboo throughout the year; another, average strength 61, at Joudpore for 7½ months—both of which were relieved every three months; and an escort, average strength 98, was furnished to the Agent to the Governor General in Rajpootana, while on his tour, from the 1st of October to the end of the year.

Topography, and physical geography.

III. Topography and Physical Geography.—The extensive plateau which lies north of the Satpuras terminates on the south, parallel to the Nerbudda, by the escarpment called the Vindhya Range, and on the west by the Aravallis, generally averaging 3,000 to 4,000 feet high, Mount Abco, the highest, rising to 5,653 feet; on the west of this range is an amphitheatre, about 10 miles long by 8 miles broad, formed by its offshoots. Erinpoorah is situated on the main road from Agra to Ahmedabad, 150 miles from Ajmere and 50 miles from Aboo. The exact latitude taken at the north-west angle of the hospital is 25°8′, 55″·8 north, and the longitude 73°5′,56″·5 east, the altitude above the sea at Karachi 869 feet. The water-shed of the country is the Aravalli Range, the country gradually sloping towards the west and north. The hills in the neighbourhood differ so much, that it is difficult to give an average height. Ronik Hill, 13 miles south-west-by-west, is 2,098 feet high, Jallor Fort 2,092, and the Dudialli Hills, about 20 miles south-west, are 2,700.

The general appearance of the country is rugged and mountainous, and scarcely belies its name Marwar—sandy monotonous plains, with scanty vegetation and hills rising abruptly from the plains are the prominent features. Erinpoorah is, however, situated in Sirohi, ½ mile from its northern frontier, presenting a marked contrast to the country by its buildings, &c., and numerous trees, principally neem, which quite shade the station. The inhabitants consist of the aborigines Minas, Bhils, Sungas, Goojers, &c., with their Rajpoot conquerors. The aborigines consider themselves a kind of autocthones, and differ in language and religion from the Rajpoots; but owing to the proselytising influence of the latter, and from a desire to assimilate themselves with the dominant race, they have partly adopted their language and religion and amalgamated them with their own. A considerable number of measurements that I have made show them to be under the average height and chest measurement. The heads are rather dolion-cephalic, special senses are acute, but the intellect is not of a high order. The district presents facilities for the study of ethnology, but the subject cannot be discussed here.

There are no rivers or swamps in the neighbourhood. A nulla on the immediate north make a river in the rains, but is almost or entirely dry at other seasons. The soil is poor, light and sandy but by irrigation and manuring, crops of barley, wheat, pulse, bajra, til, vegetables and some cotton are raised. The flora, or fauna, present nothing for remark here. The sub-soil water varies from 30 to 40 feet on an average in depth, becoming more superficial as the hills are approached.

Meteorology and climate.

IV. Meteorology and climate.—Having joined the appointment only a little over five months ago, I would scarcely be justified in reporting on the climate from experience, and the data available are but scanty. The instruments consist of a hospital thermometer and aneroid, both of which are not exact. The meteorological statistics can only, therefore, be considered rough approximations. The temperature was equable and moderate. The mean 82°5″ was under last year. The minimum 66° in January, and the maximum 97° in May. The rain-fall was probably over the average, and was occasionally very heavy, accompanied by severe thunder-storms and wind. The climate is popularly supposed to be temperate and healthy, and has sustained its reputation during the time I was in charge. The most remarkable phenomenon during 1875 was a severe shock of an earthquake on the 9th of October. The direction of the wave at Erinpoorah was from south-west to north-east, and the duration of the shock, three seconds, producing considerable vibration and a noise like that of a carriage. The shock was felt for a considerable distance to the south as far as Deesa, and several points indicate somewhere near Aboo as the centre of the disturbance, when the shock was much more violent and repeated several times.

Digitized by Google

V. Lines, barracks or huts.—Erinpoorah was founded in 1836 by Captain, afterwards General, Downing, and was called Erinpoorah with reference to his native country. The cantonment lies on both sides of the main road, the direction of which through the station is north-east to south-west; on the north-east is a nulla which joins the Luni in the rains, and on the south-east is the village of Shosgunge. The main road is intersected at right angles by a cross road which divides the officers' bungalows, &c. from the lines and bazaar. The latter is on the north-west, and divided from the Infantry lines by the main road. The Cavalry are situated 200 paces from the Infantry, towards the south. The Infantry lines consist of sixteen rows of detached mud huts with tiled roofs. The space between two rows which accommodate a company is 14 yards, but the huts of different companies are almost in apposition at the back. The huts are disposed side by side, varying in distance from each other from 2 to 12 feet, each is divided into two or three compartments by cross walls; one door opens on the end between the lines, the others open between the contiguous huts. The ventilation and light is from the door or under the tiles at the cave. The floor is excavated to a considerable extent. The amount of cubic space varies greatly. The average of a number of measurements is 11′ 1″ × 10′ 10″ × 7′ 9″. As the huts are very old, and were unoccupied for some time after the mutiny, when they fell into a state of complete dilapidation, it is impossible to keep them in repair. It follows from the above description that the lines leave much to be desired in a sanitary point of view. The site is unsatisfactory, the buildings are crowded on each other, the lines are not disposed to catch the usual breeze which is from the west, the plan is faulty, and the construction indifferent, while the cubic space is entirely too small, especially when it is taken into consideration that most of the sepoys are married, and their wives and children have to live in the above-mentioned compartments. Lines, barracks or huts.

The Cavalry lines consist of four rows of huts, 26 yards asunder, with the horses picketed between; they are somewhat better than the Infantry, but still not at all desirable.

VI. Drainage, &c.—The drainage is described as being indifferent, as a result of the position of the lines; but the porosity of the soil in a measure partially obviates this defect, and it is only after unusually heavy rains that the surface water lies. Drainage, &c.

The sepoys and the bazaar residents have to resort to a nullah and the fields for necessary purposes, and the medical officer states that this system is objectionable, but that it is difficult to carry out any other. No latrines

Wells in the lines supply a sufficient quantity of water at all seasons, which is said to be of singularly good quality. All bathing, washing of clothes and animals is done at the nullah, and the well water has probably but few sources of contamination, as the natives are very particular regarding it. Water-supply.

The bazaar was well supplied with the various articles of food which were procurable at a very moderate price, and were of fair quality: vegetables are not scarce except in the hot weather. The system of dieting is that which usually obtains in native regiments, and the men, as a rule, are well nourished, and Mr. Brereton states that very few cases of under-feeding had come under his notice. Bazaar.

Under the head of clothing, it is reported that the uniform of the men is well suited for the seasons and for the duties the men have to perform; but the undress clothes are not of sufficient warmth for the cold season. In this regiment the sepoys wear shoes of an English regulation pattern, and even though they do not fit well, the number of admissions for blistered feet is small, when, as the medical officer remarks, the amount of marching done and the sandy nature of the soil is taken into account. No injurious result, the effect of the duty which is said to have been considerable, had occured; the men had an average of four nights in bed. Clothing. Shoes.

There are no games or amusements in the regiment; several of the native officers are very fond of shooting, and those of the sepoys who like this sport frequently accompany the officers on shooting excursions. Exercise, &c.

No marches were made during the year 1875. Marches.

XIV. *Hospital.*—The hospital having been described in former reports, nothing further is here necessary. It is in a good state of repair, and affords sufficient accommodation. The want of cook-houses is much felt, especially in the rains, and at all times the practice of making fireplaces in the compound is objectionable. The men supply their own food and bedding while in hospital. Hospital.

Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	...	716·9
Absent ...	...	...	...	...	...	158
			Total	...	...	875

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Erinpoorah	1st January ...	31st Decr. 1875	619	513	6	16·38	82·7	·96	2·6
Detachment at Aboo and	15th March ...	Ditto ...	80·5	48	...	1·90	75·3	...	2·3
escort to A. G. G. ...	1st January ...	30th April 1875	61·6	55	...	2·03	139·9	...	5·2
Ditto at Joudpore ...	15th September	31st Decr. 1875							
Total ...	...	...	717	616	6	19·17	85·9	·83	2·6

No. of deaths in hospital 6; out of hospital 4; total 10; per cent. of total strength ... 1·14
„ invalided ... ... 1; „ „ ... ... ·11
„ sent on sick leave ... ...; „ „ ... ...
„ of days spent in hospital 6,680; per admission... 10·8; per man of total strength ... 7·63
„ „ „ on sick leave ; per man ... ...; „ „ ... ...

Total temporary loss of service per man of total strength ... 7.63

The minimum daily average sick was 13 in April, the maximum 30·49 in November; the minimum admitted 34 in April, and the maximum 77 in November. The health of the corps has been satisfactory in 1875. The admissions per cent. of strength and deaths will contrast favorably with most regiments in Bengal. Notwithstanding it is capable of further improvement, proper lines would reduce the percentage and prevent a considerable loss of service.

Principal causes of sickness.

Principal causes of sickness.—Paroxysmal disease, as usual, gave the largest number of admissions, 150; conjunctivitis produced 82, contusion 31, blister of the feet 30, colic 22, diarrhœa 19, dysentery 18, muscular rheumatism 17, pneumonia 16, boils 15, ulcers 15, bronchitis 14, guinea-worm 12, gonorrhœa, 12, primary syphilis 9, secondary 6. The character of the fever is generally mild, the cold stage short or absent, and liver and spleen complications unusual. Bowel diseases were of a mild type generally, could be attributed to errors in diet. The guinea-worm generally was difficult to extract, and caused considerable loss of service. The opinion of the natives is, that it is always introduced in drinking water, and explain the fact of its frequency in the lower extremities by gravity; for myself, though I have seen a large number of cases, I cannot offer a decided opinion. The few admissions from venereal disease is remarkable, and may be explained by the number of marriages among the sepoys.

Principal causes of mortality.

XVII. Principal causes of mortality.—Pneumonia caused three deaths in the early part of the year, which did not come under my observation. Diarrhœa, ague and phthisis, each produced one death, all in debilitated state.

Epidemics.

XVIII. Epidemics.—No epidemic occurred during the year. The cantonment has almost always enjoyed complete immunity from cholera. This year it advanced as far as Ajmere, and the Colonel took measures to be apprized of its further spread along the road, so as to establish a quarantine if necessary, and take all measures to prevent its introduction into Erinpoorah, which, from its situation, would appear a probable place to be infected, if, indeed, the theory of the portability of the disease is correct.

Vaccination.

XIX. Vaccination.—No sepoys were vaccinated in 1875. Almost every man in the regiment is protected, having suffered in his infancy from small-pox, which is frequently of a very mild form in the district.

Recommendations.

XX. Recommendations.—Few recommendations of importance were made, any that were necessary—isolating cases of infectious disease in the bazaar, disposal of the dead and dead animals, some improvements about the hospital, &c.—were promptly submitted by the Adjutant to the Colonel, and at once received his attention and compliance. The great defect is the lines, of which the officer commanding is aware, and, I believe, has been represented by him to the authorities before now.

Special observations and remarks.

XXI. Special observations and remarks.—But few cases of special interest were treated during the time I was in charge. Among the most important was a case of orbital aneurism from a fall on the head, treated by digital compression of the carotid, afterwards by pressure on the tumor, and injection of ergotine over it as recommended by Langenbeck, with iodide of potassium, digitalis and acetate of lead internally. Although the circulation in the carotid is said to have been completely controlled by digital pressure, for instance, the case of Rouge of Lausaune, in this instance it could not be pushed to that extent and only acted as an auxiliary to slow the circulation. The treatment was so far effectual that the man was able to return to duty. A case of snake bite in the finger produced by a cobra, and treated successfully by ligatures, numerous punctures, and suction with stimulants, is also of interest. Snakes are very common. A reward offered by the regimental authorities causes the destruction of great numbers and affords an opportunity of examining them.

A small supply of medicine is allowed for the civil population, by which I was able to establish a kind of dispensary, at which numbers were relieved; the average daily attendance being about six, invariably serious cases. Though the people are timid and averse to operative interference, still during my time I had several capital and a considerable number of minor operations. Amongst themselves serious operations are undertaken in the most primitive way;

Digitized by Google

for instance, lithotomy is done by the chumars, something after the old way of "cutting on the gripe", the calculus being squeezed out through the incision or extracted by a hook, and is said to be very successful especially in children. Dr. Moore, in a number of the Indian Annals for 1873, shows how they tear away the tunica vaginalis in hydrocele. The actual cautery seems a panacea for almost every disease. I have seen subjects mottled by the scars from it. In one instance it was applied in an infant for congenital hernia. They bear operations extremely well. In one case of comminuted compound fracture of the femur involving the knee joint, the fragments, according to Stromeyer's recommendation, were allowed to remain with good result; in another case, after extracting the eye I was obliged to remove a great part of the orbital plate of the frontal bone and portions of the bones forming the internal angle of the orbit on account of malignant growth, and the patient made an uninterrupted recovery. With a little assistance, a useful dispensary could be established, as the district is far removed from European aid. The above remarks will not be considered inappropriate to the present report when it is taken into consideration that the corps being principally local in every way, its health is conditioned and influenced to a considerable degree by the same causes which affect the civil population.

The Cavalry is recruited from the Punjab, nearly all being Sikhs, with a few Musalmans. The Infantry is almost entirely drawn from the aborigines with a few Rajpoots and Poorbeas. Thirty-three recruits were entertained in 1875, all eligible and fair specimens of their respective races.

CENTRAL INDIA.

(INCLUDING THE STATIONS OF GOONAH, AUGUR, KHERWARRAH, SIRDARPORE, SEHORE AND AJMERE.)

Average strength present during the year	...	Cavalry 586·99;	Infantry 2280·42
„ daily sick per cent. of average strength	...	„ 2·27	„ 2·82
Ratio of mortality per cent. of average strength	...	„ ·71	„ 1·12

1st Central India Horse—Goonah.

Surgeon R. Harvey has furnished the Annual Sanitary Report of the regiment for the year 1875.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Goonah and Augur ...	23·2	1·02	1·06
1871 ...	Augur	25·9	·82	1·3
1872 ...	Ditto	33·03	1·20	1·3
1873 ...	Goonah, October 1873 ...	22·8	1·22	1·10
1874 ...	Ditto, Ditto ...	26·6	·40	1·55
	Average ...	26·31	·93	1·26
1875 ...	Goonah ...	80·47	·20	2·55

I. Medical Officers.— Surgeon F. P. Edis officiated in medical charge of the regiment from the 1st January to the 24th November, when Surgeon R. Harvey, M.B., resumed charge on return from furlough, joining at Mathura as the regiment was on the march to the Camp of Exercise at Delhi. The detachment at Sehore was under the medical charge of Surgeon-Major W. E. Allen of the Bhopal Battalion throughout the year, and that at Tehri received medical aid from the Civil Surgeon of Lallatpore. The escort to the Agent, Governor General, was under the care of Surgeon R. Caldecott, Bombay Army, and the men left at Goonah, on the march of the regiment to Delhi, were in medical charge of a hospital assistant. Medical Officers.

II. Location and movements.—Head-quarters were at Goonah up to 1st November, when they marched for Delhi, arriving there on 3rd December and remaining till the close of the year. The average strength for the year was 251·08. A detachment, relieved in January, May and September, was at Sehore throughout the year. Average strength 33·87. A detachment, partially relieved in January and May, was at Tehri (Bundelkhand) Lallatpore and adjoining country up to 8th July in pursuit of a gang of outlaws. Average strength for period 36·96, for year 19·14. An escort of average strength 34·03 for period or 7·92 for year was furnished to the Governor General's Agent for Central India up to 26th March; and another of 37·96 to the Viceroy in November and December. Various small outposts, relieved in January, May and September, were stationed at—Udenheri 5 men, Pachor 5, Karanwas 5, Biaura 6, Ghorapachar 5, Binagaon 6, Barkhera 5, Parbatti 5, Rotiai 5, and Badaura 4, throughout the year; and a few men were always absent on command, buying grain, horses, &c., and doing other miscellaneous duties. The aggregate annual total of all these, none of which are included in the strength present, gives an average strength of 110·81. A detachment of an average strength of 66·39 for the period, or 11·10 for the year, remained at Goonah in November and December. Location and movements.

Digitized by Google

Drainage. *VI. Drainage.*—No new remarks need be made on this head. , The natural drainage is all sufficient.

Conservancy. *VII. Conservancy.*—No change has been made in the arrangements previously described.

Water-supply. *VIII. Water-supply*—Is described as having been good and abundant throughout the year.

Diet. *IX. Diet.*—Supplies are said to have been good and abundant and cheaper than in 1874. The men appear to be well fed, and there seems to have been no case of under-feeding. The arrangements described in the report for 1873 continue in force.

Clothing. *X. Clothing.*—No alterations have been made in the uniform of the men during the year. The clothing is of good quality and suited to the climate and season of the year.

Duty and employment. *XI. Duty and employment.*—The average strength present at head-quarters having been greater than in 1874 (251·08 against 216·10), the duty has been somewhat less severe, and the average number of continuous nights in bed has been 3·003 as compared with 2·62 in 1874. During the last four weeks, while in camp at Delhi, the work both day and night was rather hard; the continuous nights in bed being two only; but, so far as was apparent, no injurious effect resulted. The regiment was extremely healthy, and, with the exception of three admissions for dysentery in January 1876, no case of serious disease occurred.

Exercise. *XII. Exercise.*—The usual regimental games, shooting excursions, &c., have been regularly engaged in, and do not appear to have injuriously affected the health of any man, while their salutary influence is always marked.

Marches. *XIII. Marches.*—The regiment marched for the Camp of Exercise, Delhi, on the 1st November, and arrived there on the 3rd December, being encamped at Badli-ki-Sarai. The encamping grounds between Goonah and Delhi are reported by the medical officer to have been generally in fair order as regards their cleanliness, and an abundant supply of good water was obtainable at them.

Hospital. *XIV. Hospital.*—The hospital at Goonah, which has been already described, is said to be in good repair. The new buildings for the accommodation of the hospital assistants and servants, mentioned in last report as sanctioned, were completed during the year. No provision for a dead-house has yet been made, but *post-mortem* examinations are seldom necessary.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	...	323·11
Absent	...	168·89
Total	...	492

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
	1875.	1875.							
Head-quarters at Goonah ...	1st Jan. ...	31st Dec. ...	251·08	232	...	7·38	92·40	...	2·94
Detachment at Sehore ...	Ditto ...	Ditto ...	33·87	12	...	·18	35·43	...	·53
Detachment at Tehri ...	Ditto ...	8th July ...	36·96	...	...	·24	...	...	·65
Detachment at Goonah ...	1st Nov. ...	31st Dec. ...	66·39	12	...	2·69	108·11	...	4·05
Escort to Agent, Governor General.	1st Jan. ...	26th March	34·03	4	...	·40	50·50	...	1·17
Total ...	.....	.....	323·11	260	...	8·23	80·47	...	2·55

Number of deaths in hospital 0; out of hospital 1; total 1;	per cent. of total strength	...	·20
„ invalided 14;	„ „	...	2·85
„ sent on sick leave 3;	„ „	...	·61
„ of days spent in hospital 3,005;	per admission 11·52;	per man of total stregth	...	6·11
„ „ „ on sick leave 406;	per man 81·20;	„ „	...	·83
Total temporary loss of service per man of total strength			...	6·94

The average strength at head-quarters was 251·08, and this body gave 232 admissions or 92·40 per cent. of strength. As no annual report, except last year's, and no sanitary blue book, but that for 1871, were brought with the regiment to Delhi, I cannot give a full comparison with former years, but there has been an apparent increase over any previous year except 1866. This has been brought about by entering in the admission and discharge book all such cases as were formerly treated as out-patients. To a certain extent, I agree with the remarks of Surgeon Edis in last year's report as to the disturbing effect of the out-patient system on the correctness of the vital statistics of a regiment. In his report, after

Digitized by Google

commenting upon the practice of treating slight cases as line sick, and the inaccuracy thereby caused on the statistics, he proceeds in an elaborate table to add all the out-patients of previous years to the number returned as sick in hospital, and deduces therefrom that the regiment, far from having been, as a rule, one of the most healthy in India, has stood high in the order of unhealthiness, with the practical corollary that the existing hospital accommodation is utterly inadequate, and must be trebled or quadrupled in order to become sufficient.

Central India has always been reported a healthy country, and that Surgeon Edis's inferences to the contrary are incorrect, is, I think, proved by this year's returns. It does not appear to have been an unusually healthy year, save that there was, perhaps, less fever than usual after the rains; yet, as shewn by the following extension of Mr. Edis's table, though the average number of daily sick in hospital has been nearly doubled by the admission of cases which would formerly have been treated as out-patients, the total number of men treated has been much smaller than in any previous year.

Years.	Number of men admitted into hospital during the year.	Average daily number of sick in hospital.	Number of men treated as out-patients or "line sick" during the year.	Daily average number of "line sick patients."	Total number seeking medical aid during the year, the sum of columns 2 and 4.	Total daily average sick, sum of columns 3 and 5.	Remarks.
1	2	3	4	5	6	7	
1868 ...	180	10·70	733	10·30	913	21·00	Regiment at Goonah.
1869 ...	161	9·00	1,075	24·00	1,236	33·00	Do. do.
1870 ...	77	3·58	748	14·50	825	18·08	Regiment at Goonah till September 26th.
1871 ...	82	4·30	513	9·60	595	13·90	Regiment at Augur.
1872 ...	94	3·74	494	10·00	588	13·74	Do. do.
1873 ...	64	3·18	548	10·90	612	14·08	Do. do. till Oct.
1874 ...	79	4·61	326	7·00	405	11·61	Regiment at Goonah.
1875 ...	260	8·23	...	...	260	8·23	Regiment at Goonah.

The total number of days spent in hospital at Goonah by the 232 men admitted at head-quarters was 2,694, giving a daily average sick-rate of 7·38, or 2·94 per cent. of strength present.

XV. B. The detachment at Sihor.—Average 33·87 men gave twelve admissions, equal to 35·43 per cent. of strength per annum. No death occurred. The total number of days spent in hospital was 67, giving an average daily sick-rate of only ·53 per cent. of strength against 2·94 at head-quarters. Detachments.

C. Detachment at Tehri.—It is doubtful whether this detachment ought to be included in the strength present, as the men were much scattered over the country, and only received medical aid at Lallatpúr. I have included it, however, as it was included by Surgeon Edis last year, and a case remained to be accounted for. Its average strength was for the year, 19·14. No admissions were reported; the number of days in hospital was 45, and the average daily sick was ·24 for the period the detachment was absent, or ·12 for the year. One man, a camel sowar, died at Tehri without medical aid; the cause of his death is unknown.

D. Detachment at Goonah.—A party averaging 66·39 men was left behind at Goonah when the regiment marched to Delhi. It furnished twelve admissions in November and December, or at the rate of 108·11 per cent. of strength per annum. The number of days in hospital was 164, and the daily average sick 2·69 for the period, or ·45 for the year. I have little doubt that the remarks as to the increased rates of admissions at head-quarters apply to this detachment.

E. The Escort of the Agent, Governor General for Central India averaged 34·03 men. Four men were admitted, or 50·50 per cent. of strength per annum. The total days in hospital were 35, and the daily average sick was ·40. This detachment is always hard-worked, and the fact that it furnished little more than half the admissions per cent. of strength, is to me another proof of the trifling nature of the cases admitted at head-quarters.

2. *Mortality.*—The only death during the year was the one out of hospital at Tehri, noticed above, making the percentage of total deaths to total strength ·203. Mortality.

3. *Invaliding.*—Fourteen men of long service were invalided; almost all from debility consequent on old age and "want of nerve" unfitting them for the duties of a cavalry soldier. One man, of 11 years' service, was discharged for physical disability. Owing to paralysis he was unable to make sufficient use of his bridle-arm and left leg. Three men were sent on sick leave, one suffering from dysentery for six months; one, necrosis for three months; and one case of broken leg for two months. Invaliding.

Digitized by Google

Principal causes of sickness.

XVI. Principal causes of sickness.—As I only rejoined the regiment on the 24th November, I am unable to speak, of my own knowledge, of the general character of the sickness during the year, but I believe that it assimilated pretty closely to that of the two years immediately preceding it; so that in my opinion the enormous apparent increase in the admissions and daily average sick indicates no real increase of unhealthiness, and the apparent decrease in the total number treated, no real (or at most but a slight) decrease on these years. The principle on which the present return is compiled is so different from that previously used, that comparison is impossible to one who has not seen the cases; but the following analysis seems clearly to shew that they were, as a rule, slight, and that climate had little to do with the causation of the immense majority.

A. Head-quarters.—The 232 admissions were made up as follows:—

Division I.—General diseases. *Sub-Division A*—92 cases, 78 of which were cases of quotidian, 5 of tertian, and 5 of quartan ague. These contributed 502 to the total of 2,694 days spent in hospital, or 5·70 days per case. One non-fatal case of cholera, and three slight cases of mumps make up the total. *Sub-Division B* gives 7 cases, 6 of them muscular or chronic rheumatism, and 1 of secondary syphilis.

Division II.—Local diseases—caused 75 admissions, distributed thus:—

Diseases of nervous system.—2 Neuralgia, 17 days or 8·50 per case.

Diseases of Eye.—8 Conjunctivitis, 43 days, or 5·38 per case.

Diseases of Respiratory system.—1 Catarrh, 14 days or 14· per case.

Diseases of Salivary glands.—2 Inflammation, 13 days or 6·50 per case.

Diseases of Digestive system.—25, one of these was a case of dyspepsia, 6 days; 16 were dysentery; these aggregated 110 days, or 6·9 per case, but excluding one case sent on sick-leave, the 15 discharged to duty spent only 75 days in hospital, or 5 days per case. The remaining eight admissions were for diarrhœa, giving 47 days, or 6 per case.

Diseases of the generative system.—2 cases of orchitis. One of these was caused by bumping against the saddle.

Diseases of organs of locomotion—1 case of necrosis following guinea-worm. Partial removal of the os calcis was done early in May, and the man now bids fair to have a useful foot, though with a stiff ankle. He is at present away on furlough, and will, I hope, return to the regiment fit for duty, as he is a good man, and the commanding officer is anxious to retain him in the service. This case contributes 275 days, or upwards of 10 per cent. to the total number of days in hospital.

Diseases of the cutaneous system—Gave 34 admissions; 9 for ulcers, 22 for boils, and 3 for itch. The cases spent between them, 409 days in hospital, or 12·03 per case, but the great majority were trifling, for while five cases contributed 191 days, or 38·20 days per case, the remaining 29 gave 218 days, or only 7·51 days per case. In my experience, the majority of cases in this class were the result of kicks and saddle-galls, and were entirely independent of climatic causes.

Division III.—Injuries.—Contributed 58 admissions, made up chiefly of contusions caused by kicks and galls, sprains, bites, &c. Two cases of fractured ribs were admitted, one caused by the fall of a wall, the other by a fall from horseback; one of fractured thigh by collision with a bullock; two of broken leg by kicks of horses; and one of toe by the horse treading on the man's foot. These cases contributed 1,121, or 41·64 per cent. to the total number of days in hospital.

It is thus apparent that there is a singular absence of serious disease. The graver forms of fever, and of cerebral, respiratory and hepatic disease are conspicuous by their absence, and comparatively few of the severer cases can be attributed to climatic causes. This is well shewn in the following table, which gives the admissions and days spent in hospital for each class of disease, with the ratios to their respective totals:—

	Diseases.	Admissions.	Per cent. of total admissions.		Days spent in hospital.	Per cent. of total days.		Days per admission.	
Attributable to climate.	Fevers ...	88	37·93	122 admissions =52·59 of total admissions.	502	18·63	775 days, or 28·75 of total days.	5·70	$\frac{775}{122}$ =6·53 days per case.
	Cholera ...	1	·43		23	·85		23·0	
	Rheumatism ...	6	2·59		62	2·30		10·33	
	Neuralgia ...	2	·86		17	·63		8·50	
	Catarrh ...	1	·43		14	·52		14·0	
	Dysentery ...	16	6·90		110	4·08		6·90	
	Diarrhœa ...	8	3·45		47	1·74		6·0	
Not attributable to climate.	Mumps ...	3	1·29	110 admissions =47·41 of total admissions.	22	·81	1,919 days, or 71·25 of total days.	7·33	$\frac{1,919}{110}$ =17·44 days per case.
	Syphilis ...	1	·43		27	1·00		27·0	
	Conjunctivitis ...	8	3·45		43	1·59		5·38	
	Inflamed glands ...	2	·86		13	·48		6·50	
	Dyspepsia ...	1	·43		6	·23		6·0	
	Orchitis ...	*1	·43		3	·11		3·0	
	Necrosis ...	1	·43		275	10·21		275·0	
	Cutaneous ...	34	14·66		409	15·18		12·03	
	Injuries ...	*59	25·43		1,121	41·64		19·00	
		232	100·00		2,694	100·00			

* One case of orchitis caused by bumping on saddle added to injuries.

Digitized by Google

Almost the only cases involving danger which could be attributed to climate, were those of dysentery, and only one or two of these can have been severe, the cases which were discharged to duty having averaged only five days each in hospital. The generally trivial nature of very many of the cases is shown by the fact that 5 cases spent only one day, 24 two, 34 three, and 28 four days in hospital; by the absence of any fatal case, and by the fact that only three cases were severe enough to require to be detailed in the case book; and I think I am entitled to say that the climate of Central India is sufficiently vindicated, and that the 1st Central India Horse has been singularly healthy during the year under review, as it has always been since I joined it in 1872.

Detachments.

B. Detachment at Sihor.—Eight cases of quotidian ague and four of dysentery make up the 12 admissions. As the average period of treatment was 5·58 days per case, it may be assumed that they were for the most part slight cases.

C. Detachment at Tehri.—One case of diarrhœa remaining from 1874 is the only one returned. Cases of slight illness not subject to treatment no doubt occurred, as the work was severe.

D. Detachment left at Goonah.—On march of regiment to Delhi, this detachment gave twelve admissions; four from quotidian ague, 1 conjunctivitis, 2 dysentery, 1 ulcer, 2 boils, and 2 accidents, concerning none of which can I give any particulars.

E. Escort to the Agent, Governor General.—This detachment gave four admissions, *viz.*, one each for primary syphilis gastritis, dysentery, and accident. It is possible that in this detachment and at Sihor and Tehri men were treated for slight ailments who were not returned as sick; but if so, this only shows that other medical men follow the same system as has always prevailed in the regiment.

Principal causes of mortality.

XVII. Principal causes of mortality.—Nothing is known as to the cause of death of the sowar who died during the year.

Epidemics.

XVIII. Epidemics.—I am unable to discuss this subject, as I was not at Goonah during the year. There appears to have been cholera in a town 21 miles distant in June, and a case, the register of which has been sent in, occurred in August. I am informed that a few isolated cases occurred at this time along the high road, but there does not seem to have been any thing approaching a general epidemic.

Vaccination.

XIX. Vaccination.—No men were vaccinated, as all are already protected, most of them by previous small-pox. All unprotected children are said to have been vaccinated by the Goonah dispensary vaccinator early in the year, but I have been unable to obtain a return of the number.

Recommendations.

XX. Recommendations.—In June, Surgeon Edis recommended that some means of ventilation should be furnished to the new quarters for the hospital establishment. The matter was referred to the Engineer in charge, and the required ventilation provided. No other recommendation appears to have been necessary.

2nd Central India Horse—Augur.

Medical Officers.

I. Medical Officers.—Surgeon-Major D. F. Keegan, M. D., held medical charge of the regiment from the commencement of the year up to the 10th May, when he proceeded on furlough. During the remainder of the year, Surgeon R. Caldecott, of the Bombay Establishment, held the officiating charge. The Indore detachment has been under the charge of Surgeon-Major T. Beaumont, of the Madras Establishment, throughout the year. The squadron of the regiment which proceeded to Delhi with the 1st Regiment Central India Horse has been under the charge of the medical officer of that corps. The sanitary report of the regiment for 1875 has been submitted by Surgeon R. Caldecott, Bombay Medical Service.

Years.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Augur and Goonah ...	10·6	·61	4·5
1871 ...	Goonah	85·1	·61	3·61
1872 ...	Ditto	57·9	·40	2·3
1873 ...	Augur October 1873 ...	40·3	1·22	2·1
1874 ...	Ditto	58·9	·40	2·66
	Average ...	69·96	·65	3·03
1875 ...	Augur ...	40·93	1·21	1·93

Location and movements.

II. Location and movements.—The head-quarters of the regiment have been quartered at Augur throughout the year. On the 4th October one squadron of the regiment left the station for Goona *en route* to the camp of exercise at Delhi, with the 1st C. I. Horse. In the first week in November, the remainder of the regiment, with the exception of half a troop who remained to do the line guards, &c., proceeded to Indore and various places on the

Digitized by Google

road between Choral Chowkee (the present terminus of the Holkar State Railway) and Mundicor to act as escort to His Excellency the Viceroy during his tour in Western Malwa. They were absent about three weeks. Detachments of strength noted have been stationed throughout the year at the following places :—

Indore	22·45	sabres	Jáwrah	22	sabres.
Thál .	6	„	Makhsi	5	„
Mundisor	12	„	Puná Kheri	11	„
Dropárá	6	„	Sháhjahánpur	9	„
Náun Kheri	6	„	Mahidpur	8	„
Sáranpur	4	„	Rutlám	9	„

Topography and physical geography.

III. Topography and Physical Geography.—This has been fully described in previous reports (*vide* pages 61 and 62 of the Sanitary and Medical Report of the Native Army of Bengal for 1869, map appended). No changes have taken place during the year.

Meteorology, and climate.

IV. Meteorology and climate.—The rainfall was above the average in 1875. The rains commenced in the first week in June and terminated in the last week in September. Total rainfall 51·97 inches.

The hot weather of 1875 was a very mild one, the evenings and nights being cool throughout. The month of October, generally hot and muggy at Augur, was cool throughout.

Lines and huts.

V. Lines and huts —No alterations have been made in the lines, which have been fully described in previous reports. The huts are in good repair, and there is no overcrowding whatever. Each man has about 750 cubic feet of space and 90 feet superficial area. In addition he has a yard 22 feet by 9 feet behind his hut.

Drainage, &c.

VI. Drainage, &c.—The natural drainage of the lines is described as being excellent, and carries off the surface-water to a tank situated to their south.

Conservancy.

The latrine system, which is the same as has been described in previous reports, is said to have worked well throughout the year.

Water.

Water is obtained from wells, and is described as being of good quality and abundant; a trough is attached to a well at the north of the lines, and at this the horses were watered. The men bathe in tanks, and the washing of the regiment is done at a tank at the other side of the city of Augur.

Diet.

The various articles of food were plentiful and cheap; vegetables were procurable.

Clothing.

The clothing of the men is described as being very suitable.

Duty and employment.

XI. Duty and employment.—The average number of men present at head-quarters has been 213·13. The duty has consisted of parades (on an average three times a week, except in the rains), drill and sentry duty. The number of men stationed at the different out-posts is stated in Section II. About 75 men were continually absent on furlough. The remainder of the regiment were engaged in the various escort duties in Central India.

The men at head-quarters had an average of 3·7 nights in bed per week.

Exercise, amusements, occupation.

XII. Exercise, amusements, occupation.—The amusements, &c., have been described in many former reports. Tent-pegging, lime-cutting, &c., are very popular amongst the men. Many of the men go in greatly for *shikar*.

Marches and service.

XIII. Marches and service.—One squadron of the regiment left the station on the 4th October for Goona, distance 130 miles, marching *viâ* Saranpur and Biawra. The march occupied them 11 days. They remained at Goona until the 1st October, when they proceeded with the 1st Regiment Central India Horse, *viâ* Sipri, Morar and Agra, to the camp at Delhi. No other marches were made, the men for the Governor General's escort proceeding in separate small parties to the posts assigned to them (*vide* Section II).

Hospital.

XIV. The present hospital was fully described, and a plan of it drawn, by Surgeon D. F. Keegan, M.D., in his annual report for 1874. Beyond cleaning and white-washing, no alterations of any kind have been made. Both the hospital and its outbuildings are in excellent repair, and they are all that can be desired. The hospital latrine is a good one, is kept clean and in good order. The excreta are carried away and buried with the filth from the other latrines, the ground where it is deposited being afterwards cultivated. There is no arrangement for warming the hospital, nor is any required. Bedding and clothing are provided by the men themselves. The lighting is sufficient. There has been no approach to overcrowding during the year.

Sickness, mortality and nivaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	263·88
Absent	229·11
Total	492·99

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Augur ...	1st Jan. 1875	31st Dec. 1875	213·13	80	1	4·29	37·53	·47	2·01
Detachment at Indore ...	Do.	Do.	22·45	12	...	·49	53·45	...	2·18
Squadron at Delhi ...	4th Oct. 1875	Do.	112·69	16	...	·33	58·23	...	·29
Total ...	...	...	263·88	108	1	5·09	40·93	·38	1·93

Number of deaths in hospital 1; out of hospital 5; total 6; per cent. of total strength		...	1·21
„ invalided ... ... 26; „ „		...	5·27
„ sent on sick leave ... ... 3; „ „		...	·61
„ days spent in hospital 1,859; per admission 17·21; per man of total strength		...	3·77
„ „ „ on sick leave 288; per man ... 96; „ „		...	·58
Total temporary loss of service per man of total strength		...	4·35

The following table shows the comparative sickness, mortality and invaliding of the present as compared with former years :—

Year.	Admission into hospital.	Mortality.	Invaliding.
1869	304	4	...
1870	268	1	3
1871	284	3	4
1872	186	2	12
1873	110	6	13
1874	148	2	36
1875	108	6	26

XVI. Principal causes of sickness.—The total number of admissions during the year into hospital has been 108. Of these, 12 were among the detachment stationed at Indore, and 16 among the squadron attached to the 1st Central India Horse. Ague gave 42 admissions. Dysentery gave 10; of these 10, only 2 were cases of any severity. Catarrhal ophthalmia gave 7 admissions; syphilis and gonorrhœa 3 admissions; contusions 10; gunshot wound of knee 1, and fractures 3 admissions. Principal causes of sickness.

The general health of the regiment throughout the year has been so good, that there is little to remark on in this section.

XVII. Principal causes of mortality.—The only death which occurred in hospital was the result of an amputation of the leg performed after a bad fracture of the bones of the foot. The fracture was caused by the man's horse falling on him. It occurred in the early part of the year. From Dr. Keegan's notes of the case, general sloughing of the limb seems to have occurred and the man sank. One man died of cholera at Saranpur, and one on the road about 14 miles from Indore, from the same disease; one man died at his home. His death is said to have been the result of scalding. Another man died at the dispensary at Jawrah, cause of death said to be hemiplegia. From entries in the case-book this man appears to have suffered severely from syphilis. Principal causes of mortality.

XVII. Epidemics.—Cholera was prevalent in the surrounding country and villages in the latter part of May and during June. Only one case occurred in the regiment. The man had only arrived two days before with the treasure guard from Oojein. The attack was a very mild one and the man recovered. From the fact of no other cases having occurred either in the C. I. Horse, or the 10th Bombay N. L. I., it is probable that the disease was contracted on the march. A few cases occurred in the city of Augur, but the disease was never epidemic. Epidemics.

No small-pox has occurred either in cantonments or in the city.

XIX.—Vaccination.—Ninety-eight persons were vaccinated during the year. Vaccination is only just being commenced. This cold weather the number of sowars unprotected is probably under twenty, nearly all of them being recruits. These will be at once vaccinated. When in temporary charge of the regiment in the end of 1874, I had every unprotected person in camp vaccinated (including bazars, &c.) Of the 98 above mentioned, 84 were successful. Vaccination.

XX. Recommendations.—A few recommendations concerning quarantine were made during the time cholera was prevalent in the surrounding villages, to all of which the officer commanding gave every support. Recommendations.

XXI. Special observations.—There is really little of interest on which to remark. The health of the regiment has been extremely good, and the sanitary condition of the station is all that could be desired. Since I have been in charge, only one case worthy of notice has occurred. A sowar aged 36 was wounded just below the knee in an affair with dacoits near Nimuch. Special observations.

Digitized by Google

He was taken into hospital there, where he remained about three weeks, and eventually they sent him on here. When he arrived, about one month after the receipt of the injury, his leg was in a dreadful state, the knee-joint being full of pus. Amputation was performed at middle third of thigh on 9th June; the stump did well at first, but about three weeks after the operation, the bone became diseased, and sinuses formed in every direction. A second operation was performed on 26th July, and the femur removed from just below the trochanters. The man remained in a very critical state for many days, as deep and extensive sloughing occurred in the stump, but he eventually made a good recovery.

Inspection.

Inspection.—Inspected by Dr. Thorpe, Deputy Surgeon-General of the Agra Circle, onthe 14th December 1875. He reports favorably of the site of the lines, and of their general condition. The huts are not overcrowded, the water supply is of excellent quality, the drainage is described as sufficient. The latrines are used by the men generally, and the night soil is removed from them in iron receptacles and buried beyond the infantry parade, where the ground is afterwards placed under cultivation.

The hospital is described as being well ventilated, clean, and in good order.

Meywar Bheel Corps—Khairwarah.

Medical Officers.

Medical Officers.—Surgeon-Major L. F. Dickson, M.D., has held officiating medical charge of the regiment throughout the year. At Kotra Outpost, 1st class Hospital Assistant Sewtuhal, has held medical charge throughout the year. At Oodeypore, Dr. K. Burr, uncovenanted service, has held medical charge of the detachment during the year. Surgeon-Major L. Dickson, M.D., has furnished the sanitary report of the Regiment for 1875.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Khairwarah ...	150·9	·77	4·17
1871 ...	Ditto	129·4	1·42	4·09
1872 ...	Ditto	148·9	1·2	4·02
1873 ...	Ditto	152·9	1·13	5·41
1874 ...	Ditto	92·2	1·55	4·13
	Average ...	134·86	1·21	4·36
1875 ...	Khairwarah ...	87·61	·99	2·25

Location and movements.

II. Location and movements.—The head-quarters, with an average annual strength of 271·17, was located from 1st January to 31st October at Khairwarah, remaining there until ordered to Oodeypore as guard of honour to the Viceroy, on 1st November. It left Oodeypore on 27th November, and arrived in Khairwarah on 29th, remaining there until close of the year. There was (as usual) a strong detachment, average annual strength 120·91, at Kotra, during the whole year. During the year (except from 1st to 26th November, when it was included in the head-quarters then at Oodeypore), the usual detachment was present at Oodeypore; average annual strength 55·02. From 1st to 29th November, the period that the head-quarters was absent from Khairwarah, there was a detachment at that place of the average annual strength of 10·62. These four together make up a total present strength of 457·72, from which strength the statistics of my return are taken.

Besides these, there has been a detachment all the year at Banswarra, average strength 21·71; also a detachment at the same place on boundary duty from 8th January to 14th April, and 16th April, strength 178, which returned on the two latter dates in separate instalments of 103 and 75, respectively.

There was also a detachment on special duty to Bagore, in Meywar, of 2 officers and 224 men from 3rd September, returning in instalments of 135 and 89 on 15th and 19th October, respectively. These detachments go to swell the total absent for the year, of 248·33; and having no medical officer with them to make out returns, their sick do not appear in mine.

Topography.

III. Topography.—This was very fully entered into in my report for 1874.

Meteorology.

IV. Meteorology.—The barometer shows considerable equability, the highest figure for the year being 29° 5′, and the lowest 28° 8′.

Temperature.

The lowest recorded temperature (in January) was 42°, and the highest (in May and June) was 104.° The coldest months were January and December, the approximate mean for those months being 66°2′, and 62°7′, respectively. April, May and June were the hottest months, having an approximate mean of 90°2′, 92°0′, and 90°6′, respectively.

Mean daily range.

The mean daily range has been greatest in January and March, 25° and 24,° respectively; and least in July and August, in both of which months it was but 9°.

Mean annual temperature.

Mean annual temperature.—The mean annual temperature was 78° dry bulb and 71° wet bulb.

Digitized by Google

Climate.—The climate has been as usual mild and equable, and the health of the district most satisfactory. Climate.

Wind.—The wind has been westerly during the first eight months of the year, and chiefly easterly during November and December; much as usually the case in this district. Wind.

Rain-fall.—The rain-fall has been, as was the case throughout a great extent of India, abnormally heavy. Occasionally, too, heavy and longer sustained in July and August than was compatible with the interest of the cultivators; there was a complete break of 20 days, which began to burn up the somewhat enfeebled crop. This was again followed by the enormous and, in Rajpootana, wholly unprecedented fall of 22 inches and 60 cents in four days, which devastated the country, breaking the bunds of almost every tank and reservoir, and deluged the station of Khairwara, sweeping away the school-house and many minor buildings, and destroying a great part of the crops in the valleys. This brought up the total fall to 48 inches 72 cents, or nearly double an average year's rain for the last 20 years, which has been, up to last year, estimated as 26 inches. Rain-fall.

Lines and station generally.—Disposition of lines. These were fully described in my report for 1874, together with a brief description of those of the Kotra outpost; and there has been no change in any particular in either. Lines and station generally.

Drainage.—The drainage is excellent, owing to a good natural site. Drainage.

VII. Conservancy and latrines.—As reported on for 1874, except that there has been much less fault to find with the native village, which has been kept very much cleaner than formerly reported. Conservancy and latrines.

VIII. Water-supply.—The drinking water from two good masonry wells has been found, as formerly, to be sweet and pure. Water-supply.

There has existed for many years a great dearth of water for washing and bathing purposes, and many plans have been formed, and again abandoned, for supplying this want. An attempt was made, with partial success, in 1873, by making a dam across the little river. This, however, was not of consolidated masonry, and was completely washed away by last year's floods. On the other hand, however, these floods have excavated a larger and deeper pool than any which previously existed, just above the quarter-guard, an excellent situation, being very near the lines. This will probably last until nearly the end of the hot season, if not quite.

IX. Diet.—There is no occasion for any special remark under this heading. As noted in former reports, when with his regiment, the Bheel sepoy is by no means given to stint himself in the same way as the ordinary Hindoo, and grain throughout the year has been plentiful and cheap—particularly the Bheel staple crop of Indian corn. Whilst away on leave at his home, however, he shares the poorer diet of his poorer brethren, and is very apt to return in bad condition and covered with ulcers and skin disease. Diet.

X. Clothing.—As in former reports, an attempt was made during the year to introduce a new boot, as the old one has been frequently reported as a fruitful cause of admission to hospital. At my request Colonel Gordon wrote to the officer commanding the Deolee force, asking him to let us have a few pairs of the boot used in that corps for trial. That officer, however, replied that their pattern could not be recommended either. All that we have been able to do, therefore, was to endeavour to procure better leather, and to induce the contractors to supply more sizes of boot. The good effect of these little changes seems to be clearly marked, as only one man during the year has been admitted for "blistered feet," and there have been fewer ulcers over heel and instep from the same cause. Clothing.

XI. Duties and employment.—These have been, as during several years past, at times very severe. The ordinary duties have been (in part) much the same as those in any other Native Infantry regiment; the usual guards over two stations, Khairwara and Kotra (including in the former a magazine and fort). Much more than the usual number of escorts, as there is no rail nearer than Ahmedabad, distant 107 miles; and the roads are not oversafe, so that Government stores, &c., coming from Ahmedabad or Agra require an escort. Two standing detachments, at Banswarra averaging 21·71, and at Oodeypore averaging 55·02; the usual parades and exercises (two parades daily during the cold weather), &c. Duties and employment.

Emergent duties.—The emergent duties are, as noted in several previous reports, very heavy for some years past, and 1875 has proved no exception. Emergent duties.

Besides the large escorts out with the Commandant, who is *ex-officio* 1st Assistant Political Agent for Meywar, with the 2nd-in-Command (*ex-officio* 2nd Assistant), and the Assistant Political Agent (all separate), on boundary and other duties, and the escort with the Political Agent for Meywar when away with the Rana to meet His Royal Highness the Prince of Wales, there have been several large detachments out for lengthened periods on special duty. Thanks, however, to the hardy and enduring nature of these useful little soldiers, and also to the year having been remarkably free from sickness, no bad effect has been observed, and I have had no occasion for any special suggestion or recommendation.

Nights in bed—2·08. This alone shews how heavy the duties have been. Nights in bed.

XII. Exercise and amusements.—As I noted in last year's report, they have had but little time on their hands for amusement, and the usual Christmas games which were formerly kept up, appear to have fallen into disuetude. Of "*shikar*" there is none in the district, neither large nor small game. Exercise and amusements.

XIII. Marches and service.—I have noted under para. 2 the employment of certain detachments on special duty. As, however, there was no medical officer with them to make Msarches and service.

Digitized by Google

out statistics, and no information has been afforded me of the marches made, I have no special remarks to make, and can only say that those detachments returned no whit the worse for the duties they were engaged on.

Hospital. *XIV. Hospital.*—Fully described in my report for 1874.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the Regiment—

Present	...	...	...	...	457·72
Absent	...	...	...	...	248·33
			Total	...	706·05

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Khairwara and Oodeypore ...	1st January.	31st December.	271·17	122	2	3·58	44·99	0·73	1·32
Detachment at Kotra ...	ditto.	ditto.	120·91	233	2	5·43	192·70	1·66	4·48
Detachment at Oodeypore ...	1st January. / 27th Nov.	31st October. / 31st December.	55·02	39	...	1·12	76·33	Nil.	2·03
Detachment at Khairwara ...	1st November.	29th November.	10·62	7	...	·17	65·91	Nil.	1·60
Total ...	.....	.....	457·72	401	4	10·30	87·61	·87	2·25

Number of deaths in hospital 4; out of hospital 3; Total 7; per cent. of total strength				...	·99
„ invalided	20;	„	„	...	2·83
„ sent on sick leave	1;	„	„	...	·14
„ of days spent in hospital 3,694; per admission	9·21;	per man of total strength		...	5·23
„ „ on sick leave 15; per man ...	15;	„	„	...	2·12
Total temporary loss of service per man of total strength				...	7·35

The table above shews that the general health of the corps has been remarkably good, and at head-quarters was such that Khairwara will probably stand in the very first rank as compared with other stations of our Native regiments. The Kotra outpost contributes a large proportion of the general average of sickness as compared with head-quarters, or with the outpost at Oodeypore.

I here re-produce my table of last year, shewing up to date the chief diseases to which the corps has been liable, as far back as we have any records.

	Year.	Diseases.	Fevers.	Guinea-worm.	Abscess.	Ulcers.	Contusions.	Opthalmia.	Total.	Other diseases.	Grand Total.
Steady and progressive decrease.	1858	Admissions.	342	196	54	228	207	67	1,094	636	1,730
	1859	„	525	159	35	285	138	52	1,194	469	1,663
	1863	„	415	96	39	101	75	43	769	223	992
	1864	„	336	101	48	50	61	38	634	186	820
	1865	„	286	56	48	39	65	37	531	201	732
	1866	„	333	76	40	32	22	12	515	141	656
	1867	„	287	71	34	21	17	41	471	145	616
	1868	„	240	35	50	17	29	35	406	147	553
	*1869	„	495	85	86	32	22	32	752	292	1,044
	1870	„	229	53	24	8	40	28	382	111	493
	1871	„	184	54	14	3	6	23	284	102	386
	1872	„	406	45	75	30	40	12	608	196	804
	1873	„	282	40	63	55	27	59	526	268	794
	1874	„	155	63	30	44	17	25	334	103	437
	1875	„	133	51	41	6	21	23	275	126	401

*The famine and epidemic year in Rajpootana.

Mortality. *Mortality.*—The mortality of the year has been seven only, of which number, four deaths occurred in hospital. This is below the usual average and requires no special comment.

Invaliding. *Invaliding.*—There were 20 men invalided, 5 only for medical reasons, and the remainder for old age. This number, however, represents the invalids of two years, as I noted in my last report that Colonel Gordon has represented the hardship of sending weakly men so far as Neemuch in the fever season, during which they had to pass through an unhealthy jungle; and pending a reply to his request to be allowed to invalid his own men on the spot, no steps were taken to send any before the committee at Neemuch. When the reply came, it was in the negative.

Principal causes of disease. *XVI. Principal causes of disease.*—These have been much the same as usual since the corps was raised. With the exception of acute bronchitis, of which 22 cases were admitted, no other disease was at all prevalent except those therein particularised. Venereal diseases were, as usual, almost unrepresented, but two cases of gonorrhœa were admitted.

Digitized by Google

I will content myself with noting here that guinea-worm, as heretofore (though only taking about the third place as regards the number of admissions), from the tedious nature of the processes by which the worm is gradually extracted, and the extensive suppuration which it almost invariably excites, contributes a large share of the number of days in hospital.

For example, during the past year the total number of days in hospital for 414 total treated has been 3,759; whilst the total number for 52 treated for guinea-worn was 677, much less, however, than the usual average.

A free use of the knife would, in many cases, very much accelerate the progress of the disease; but the Bheel sepoy has so great a dislike to "cold steel" in the form of surgery, that one of my predecessors, finding that the men were beginning to desert rather than go to hospital, was obliged to revert to the old "expectant" system of treatment. Their dislike to operative surgery is clearly evidenced by the statistics of the little dispensary at Khairwara, in which no more than two or three capital operations are performed in any one year; though it is so popular in other respects, that the number of new cases treated during 1875 by far exceed the total population of the station. The causation of guinea-worm has been touched on by me in connection with the water-supply in my return for 1874, and I have no original information now to communicate.

For the great difference between the statistics of disease at head-quarters, and those of the Kotra detachment, I would also refer to my return for the past year (1874), as well as to suggest that the greater rain-fall of the latter place may be, more or less, responsible for the greater prevalence of fevers, rheumatism and chest diseases.

XVII. Principal causes of mortality.—The total deaths in hospital were but 4; two cases of lobular pneumonia at Kotra, and 1 case of eucephalitis, and 1 of phthisis pulmonalis, at head quarters. Out of hospital 3 deaths occurred,—1 of dysentery, 1 of erysipelas (phlegmonous), and 1 of which the disease was not known. Principal causes of mortality.

XVIII. Epidemics.—There were none. The whole district was remarkably free from disease. Epidemics.

XIX. Vaccination.—As before noted in other reports, almost every man of the corps has had small-pox. As far back as I have any information, the sepoys have never allowed themselves to be vaccinated, though they will, in many instances, allow their children the benefit of this safeguard. Most of these are now protected, including 46 whom I successfully vaccinated at the dispensary during the year. I have also noted that Khairwara has, for many years past, been remarkably free from variola. Occasionally an isolated case has presented itself, but it has never spread. No case occurred during the year under report. Vaccination.

XX. Recommendations.—With exception of the steps taken with regard to the regimental boot, detailed under para. 10, none have been made. Recommendations.

XXI. Special observations and remarks.—For some years past my attention has been directed to the use of the biniodide of mercury as an alterative and absorbent application in abnormal deposits in the skin, and sub-cutaneous cellular tissue. Its use in goitre and in hypertrophied spleen is too well known to require comment. Whilst in officiating civil charge of Mymensing, however, several cases of elephantiasis of the scrotum and ankle came under my treatment, and, in each of these, a second and third application of moderately strong red ointment effected a complete cure. Special observations and remarks.

Since I have been in this station no similar cases have presented themselves until this year (1875), when I was induced to try it in a case of leprosy of nine years' standing. There were the usual large white patches on the dorsum of one foot with the usual absence of sensation in that portion of skin. The treatment by red ointment in three weeks completely restored the color of the skin and its sensation. Leprosy

I have now under treatment a case also of leprosy, where the disease has gone on to ulceration on the sole of the foot. Within a week or two the indolent intractable ulcer (under ordinary means) has almost entirely healed, whilst the fissured white patches of skin are recovering sensation, and gradually taking on a natural and healthy appearance. These somewhat remarkable results make me anxious for a trial of this treatment on a larger scale than is possible in this little station.

Malwa Bheel Corps—Sirdarpore.

I. Medical Officer.—The annual sanitary report has been compiled by Surgeon-Major A. D. Campbell, who has been in medical charge throughout the year. Medical Officer.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Sirdarpore	93·1	2·2	2·2
1871 ...	Ditto	83·4	2·04	2·7
1872 ...	Ditto	117·3	1·02	3·8
1873 ...	Ditto	111·5	1·5	3·4
1874 ...	Ditto	91·2	·67	3·15
	Average	99·30	1·48	3·05
1875 ...	Sirdarpore	120·	·67	3·26

II. Location and movements.—The corps, being a local one, has its head-quarters always at Sirdarpore. The permanent detachments have been the same as in 1874, except that the strength of the one at Ali-Rajpore has been reduced from 54 to 26 of all ranks. Location and movements.

Temporary detachments on escort and other duties have been frequent.

Digitized by Google

Meteorology and climate.

IV. Meteorology and climate.—The rainfall for the year has been 25·74 inches, considerably under the average for the previous seven years, which was 32·51 inches. The cold season temperature has, up to the end of the year, been unusually high.

Lines, barracks, or huts.

V. Lines, barracks, or huts.—There has been no change throughout the year. The lines have been kept in good repair, and there has been no overcrowding.

Drainage.

VI. Drainage.—No change during the year.

Conservancy and latrines.

VII. Conservancy and latrines.—No change during the year, and nothing to indicate that a change is desirable.

Water-supply.

VIII. Water-supply.—A grant of Rs. 3,500 has been made by Government for the construction of a permanent bund across the river Mhye; materials for its construction are being collected close below where the temporary bund was annually constructed by the sepoys: meantime, to secure a good supply of water during the approaching hot season, a temporary bund has been constructed higher up the river. The usual precautions have been taken to keep the water as pure as is practicable with river water in this country.

Diet.

IX. Diet.—The bazar supplies have been ample, and their price moderate throughout the year.

Clothing.

X. Clothing.—There has been no change in the clothing of the corps.

Duty and employment.

XI. Duty and employment.—The number of absentees has rendered the guard duty rather severe for those remaining at head-quarters, the number of nights in bed being only 2·5. I do not, however, consider that this has had any appreciable effect on the health of the men.

Exercise.

XII. Exercise, amusements and occupations.—The erection of rifle butts, the construction of a temporary bund across the river, and the collection of materials for the permanent bund, have caused the fatigue duties to be severe.

Marches and service.

XIII. Marches and service.—The only marches have been in relief of detachments and on escort duty; those are frequently through very malarious districts.

Hospital.

XIV. Hospital.—The hospital has been kept in good repair: the latrine and hospital servants' houses have been repaired during the year. The iron cots mentioned in last year's report have all been supplied, and with their tape bottoms are an immense improvement on the filthy and bug-infested wooden cots that they replaced.

Sickness, mortality and invaliding.

XV.—Sickness, mortality and invaliding.—Strength of the corps:—

Present	405
Absent	193
Total	598

Station.	Period. From	Period. To	Strength.	Total Number of: Admissions.	Total Number of: Deaths.	Daily average number of sick.	Per cent. of Strength per annum: Admissions.	Per cent. of Strength per annum: Deaths.	Per cent. of Strength per annum: Daily average sick.
Head-Quarters at Sirdarpore ...	1st November ...	31st December...	405	486	3	13·19	120	·74	3·26

Number of deaths in hospital 3; out of hospital 1; total 4;	per cent. of total strength	...	·67
„ invalided 9;	„ „	...	1·50
„ sent on sick leave 4;	„ „	...	·66
„ days in hospital 4,816; per admission ... 99;	per man of total strength	...	8·05
„ „ on sick leave 400; per man ... 100;	„ „	...	·67
Total temporary loss of service per man of total strength		...	872

Principal causes of sickness.

XVI. Principal causes of sickness.—

Diseases.	Admissions into Head-quarters hospital. 1874.	1875.	Average for 1870-71, 72-73-74.	Admissions per cent. of strength at Head-quarters. 1874.	1875.	Average for 1870-71, 72-73-74.	Admissions per cent. of total admissions. 1874.	1875.	Average for 1870-71, 72-73-74.
Fevers	128	209	171·2	33·16	51·60	44·82	36·36	43·02	44·09
Rheumatism	11	11	13·4	2 85	2·72	3·50	3·12	2·26	3·46
Syphilis	7	...	6·4	1·81	...	1·67	1·99	...	1·66
Conjunctivitis	19	58	29·4	4·92	14·32	7·70	5·40	11·93	7·55
Respiratory Affections ...	19	22	16·6	4·92	5·43	4·34	5·40	4·52	4·32
Diarrhœa and Dysentery ...	19	24	23·8	4·92	5·93	6·22	5·40	4·94	6·14
Abscess, Ulcer and Boil ...	32	39	27·0	8·29	9·63	7·06	9·09	8·02	7·03
Guinea-worm	21	30	25·4	5·44	7·41	6·65	5·97	6·17	6·55
Injuries	49	43	40·4	12·70	10·62	10·56	13·92	8·85	10·52
All other Diseases ...	47	50	33·2	12·18	12 34	8·68	13·35	10·29	8·68
Total ...	352	486	386·8	91·2	120·0	101·22	...	...	...

Digitized by Google

The circumstances of the corps remaining the same, the causes to which disease is ascribable remain as described in the report for 1874.

From the above tabular statement it will be seen that the rate per cent of admissions has been considerably higher for 1875 than for 1874 and the average of the five immediately preceding years; this increase is most marked in the case of fevers and conjunctivitis. I believe it is not due to the year being exceptionally unhealthy, but is in consequence of the amount of fatigue duty causing men to report themselves sick for slight ailments who would not otherwise have come to hospital. It will be seen that the daily average number of sick per cent of strength at head-quarters is only a small fraction over the average. There has not been a single admission for syphilis or other venereal affection throughout the year.

Nine men were invalided for discharge, eight on account of general debility, generally the result of age, and one for obesity, rendering him unfit for active duty.

XVII. Principal causes of mortality.—There were three deaths, two from remittent fever and one from general debility. Principal causes of mortality.

XVIII. Epidemics.—Cholera made its appearance in the towns and villages of the Malwa Bheel States about the beginning of May and prevailed with more or less severity, more especially in the Dhar and Jabbooa territories, till the beginning of August. The course of the disease was very erratic, and the nature of the epidemic varied much in different places, sometimes breaking out with great violence, but of short continuance, sometimes with less severity but lasting for many weeks. None of the villages in the immediate neighbourhood, say within 6 or 8 miles of Sirdarpore, had suffered till towards the end of June, and after that, only a few cases were reported as occurring in them. As a precautionary measure, quarantine was had recourse to in the station whenever it appeared desirable, short leave to men of the corps was stopped, and an annual *mela* and weekly fairs in the district prohibited. Epidemics.

A single case occurred in the hamlet of Gwaltola, in the south-east corner of the station, on the 22nd June. There was no other case till the 27th July, but between that and the 29th August, when the last case occurred, there were 20 cases, of which 13 were fatal. Of the 21 cases, 12 occurred in the lines of the corps, though no man of the corps was attacked. The following table indicates the sex and age of those attacked.

	Attacked.	Died.	Per cent. of deaths.
Men	6	3	5·0
Women	5	3	6·0
Children	10	7	7·0
TOTAL ...	21	13	61·9

There was little to throw light on the origin of the epidemic. No history of importation. Four cases were reported to have occurred between the 28th and 31st July in Bhopawur, a town about 2 miles up the river Mhye, and there was at the time a steady flow of water in the river, but, from the lightness of the rains, not a sufficient flood to flush the channel; so it is quite possible that the drinking water may have been contaminated either from that town or by chance travellers. On the whole, considering the course of the epidemic in the district generally, I am inclined to attribute the invasion to atmospheric causes. The greater number of cases, 12 out of 21, occurred in the lines of the Malwa Bheel Corps, of which the sanitary condition is much better than that of the hamlets occupied by the bulk of the population of Sirdarpore.

There was no marked case of infection; none of the attendants on the sick were attacked. The cases in the regimental lines occurred in no particular section, but in six different companies. Both before and during the outbreak, diarrhœa was very prevalent and fatal amongst children. No section of the lines was evacuated on account of the outbreak, the only movement which took place being from huts in which cases occurred to other unoccupied huts.

XIX. Vaccination.—As in former years, vaccination has been carried on amongst children in the regimental lines and station generally; all those previously unprotected have been vaccinated. There were in all 53 vaccinations, of which, 49 were successful, 3 doubtful, and 1 unsuccessful. Vaccination.

XX. Recommendations made.—The only recommendations made to the commanding officer were regarding quarantine and other matters connected with the outbreak of cholera; all were carried out. Recommendations made.

XXI. Special observations and remarks.—The treatment of nearly every case of malarious fever occurring amongst adults by the sub-cutaneous injection of quinine has been again carried out throughout the year, and with the same satisfactory results as described in the sanitary report for 1874. The neutral (soluble) sulphate only has been thus used during 1875, and there has not been a single case of abscess or ulceration in consequence of the injection. Special observations and remarks.

The Deputy Surgeon-General of the Saugor Circle made his medical and sanitary inspection of this corps on the 18th January 1876. He describes the lines as being in good repair and clean; the natural surface drainage was good. Water was obtained from one large well which has a supply of good-water all the year round, but the people in the lines generally take their water from the Inspection.

Digitized by Google

Hospital. river, and this is necessarily subject to the usual defilements of any stream running near a cantonment. The hospital was in good repair, and all arrangements for the proper medical and surgical care of the men were complete. Mr. Ross inspected the men on parade, and observed that there were fewer old men present in the ranks than there were last year; the recruits were promising and of a good stamp.

Bhopal Battalion—Sehore.

Medical Officers. *I.—Medical Officers.*—Surgeon-Major W. Allen, F. R. C. S., was in medical charge throughout the year, and has supplied the annual sanitary report. Surgeon-Major Beaumont was in charge of the detachment at Indore.

Year.	Station.	Per cent. of Strength.		
		Admission.	Deaths.	Daily sick.
1870 ...	Sehore	146·2	1·7	3·6
1871 ...	Ditto	117·9	1·19	3·27
1872 ...	Ditto	132·6	2·08	3·8
1873 ...	Ditto	62·7	2·43	1·88
1874 ...	Ditto	60·1	·43	1·44
Average...		103·90	1·76	2·80
1875 ...	Sehore	61·02	1·90	1·30

Location. *II. Location.*—The head-quarters are permanently stationed at Sehore.

A detachment of the average strength of 554 men has throughout the year been furnished to the Governor General's Agent for Central India at Indore; this detachment has been relieved every three months. An escort averaging 68 men accompanied the Agent Governor General on his tour during the first two months of the year, and another of 47 men for a few days in December, but did not give any sick. A detachment of 213 men was sent as an escort to the Governor General on his visit to Indore early in November; other smaller escorts accompanied the camps of the Political Agent in Bhopal and the Boundary Settlement Officer, but did not furnish any sick.

Topography and physical geography. *III.—Topography and physical geography.*—These have been described by me in my report for the year 1872 and 1873.

Meteorology. *IV.—Meteorology.*—The following table shows with approximate correctness the mean temperature of each month of the year, accompanied with the mean of the five previous years; the total rain-fall is also contrasted with the mean of the same period:—

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Rain-fall in inches.
Mean of five previous years...	56	61	71	86	89	83	76	76	76	73	65	60	57·4
1875 ...	59	65	77	86	88	87	77	76	77	72	64	68	56·2

Rains. The rains set in early in June and were continuous till the end of September, when, after the interval of nearly a month, there was an unusual fall of 1·3 inches, after which there was a sudden and marked increase of malarious fever. The cold season was delayed by the cloudy weather which occured in October and the first-half of November, but during December the cold was unusually great, and several cases of pneumonia of low type have been treated as the usual consequence.

Lines, barracks and huts, &c. *V.—Lines, barracks and huts, &c.*—There is nothing worthy of special remark as regards the lines, drainage, conservancy, water-supply, diet, clothing or duties of the men.

Exercise and amusements. *XII. Exercise and amusements.*—No change; all recruits are put through a gymnastic course under special instruction; a practice which is well calculated to develop the muscles.

Marches. *XIII. Marches*—Have been chiefly entailed by relieving the Indore detachment every three months.

Hospital. *XIV. Hospital*—Has been fully described in previous reports. During the year, it has been repaired and twice whitewashed.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the battalion:—

Present	799·7
Absent	134·9
Total	934·6

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From.	To.		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quaters at Sehore ...	1st January ...	31st December	717·5	417	7	9·5	58·1	·90	1·3
Detachment at Indore ...	Ditto ...	Ditto ...	55·4	42	3	·93	7·7	5·3	1·6
Escort with Governor General's Agent, Central India.	Ditto ...	6th March ...	68	13	...	2·2	106·5	...	3·2
Escort with Governor General	29th October	19th November	213	16	5	3·1	125	39·6	1·4
Escort with Governor General's Agent, Central India.	3rd December	10th December	47	...	...	...	...	...	...
Total ...	...	...	799·7	488	15	11·15	61·02	1·8	1·3

Number of deaths in hospital 15; out of hospital 3; total 18; per cent. of total strength				...	1·9
„ invalided	4	6;	„ „	·6	·4
„ invalided for physical disability ...	2				·2
„ sent on sick leave	3;		„ „	...	·3
„ of days spent in hospital 4014; per admission	8·3;		per man of total strength	...	4·3
„ „ on sick leave 267; per man...	89;		„ „	...	·2
Total temporary loss of service per man of total strength				...	4·5

XXI. Principal causes of sickness.—The year has been remarkably healthy, there having been 488 admissions giving an average per centage of sick to present strength of 1·3. Principal causes of sickness.

The majority of the admissions (5·4 per cent.) were, as usual, caused by malarious fevers, which caused 266 admissions, of which 14 were of the tertian and 9 of the quartan type.

Dysentery caused 43 and diarrhœa 23 admissions; both diseases were much more tractable than in former years, and were the cause of one death only, and of one man being sent on sick leave. Catarrhal ophthalmia caused 18 admissions, pneumonia gave 5, and bronchitis 1 admission, with one death from the former disease. There were 7 cases of modified small pox, and 9 cases of malignant cholera, as will be mentioned under paragraph *XVIII.*

XVII. Mortality.—There were 15 deaths in hospital during the year, of which 7 occurred in the head-quarters hospital, 3 in the detachment hospital, Indore, and 5 in the escort for the Governor General at Indore. Of the 7 deaths occurring in the head-quarters hospital, 1 was entered under secondary syphilis, but was due to exhaustion following excessive ptyalism, self-induced by the patient whilst on detachment duty at Indore. Mortality.

Two deaths occurred from paralysis; they were both instances of somewhat rare forms of paraplegia; one being the result or consequence of secondary syphilis, the other being a case of locomotor ataxy, the conseqence, it is believed, of the patient having overwalked himself on returning from furlough; by a singular coincidence they were both in hospital at the same time, and died within a few days of one another. Paralysis.

A fourth death occurred from cancer—epithelioma of the right cheek, extending deeply under the ramus and angle of the jaw; this case during its course required ligature of the common carotid artery on account of extensive arterial hœmorrhage coming on suddenly in the middle of the night: a branch of considerable calibre was opened by the extension of the ulceration, but on account of the difficulty, from infiltration of the tissues, of finding the particular artery implicated, I placed a ligature on the common carotid. There were no cerebral symptoms, and the ligature separated on the sixteenth day. The man unfortunately died on the nineteenth day after the operation from extension of the original disease and consequent exhaustion. The remaining three deaths were due respectively to obstruction of the bowels, probably impaction of fœces—diarrhœa and debility.

XVIII. Epidemics.—During the month of February and March, there was a slight outbreak (7 cases) of small-pox; the cases were all of very mild type, most of the men attacked having previously had small-pox or been vaccinated; they were treated in a tent pitched at some distance from the lines, and care taken to prevent communication with them; the outbreak was then soon put an end to. One case of malignant cholera occurred at the end of October, and a man who had one night previous to admission returned from escort duty with the Boundary Settlement Officer, was much exhausted by a double march he had made. There had been no cases of cholera in Sehore for some considerable time, nor could I learn that there had been any along the route by which he had marched in. He was treated by subcutaneous injection of ℥ii of chloral hydrate dissolved in water whilst he was in the stage of collapse; he seemed to revive considerably under its influence, and he ultimately made a good recovery. Suppression of urine, which lasted about 36 hours, was treated by Tinct. cantharidis and potassæ acetas. Epidemics.

An outbreak of seven cases of cholera with five deaths occurred in the detachment which left Sehore on 28th October, and arrived at Indore 4th November, to form an escort for the Cholera.

Digitized by Google

Governor General; the particulars of this outbreak will, no doubt, be given with greater accuracy than I can give them by the Indore Residency Surgeon, under whose notice it came, the detachment being in medical charge of an hospital assistant. It appears that the detachment was encamped on what is said to have been a very dirty piece of ground, running near which was a nullah, the water of which was drunk by the men, and which, there is reason to believe, was contaminated by sewage matter. The first case was attacked on the evening of the 6th November, and died on the morning of the 7th. On this latter date three more cases occurred and one death. The camp was moved a few miles out of Indore, on the Sehore road. On the 8th two more cases occurred, and the camp made another move. On the 9th the seventh and last case occurred, and one death, and two more deaths took place on the 10th and 12th, respectively.

The detachment returned to Indore, performed the duty for which it was sent there, and returned to Sehore on 19th November in good health.

Vaccination. *XIX. Vaccination.*—Thirty-six recruits all that joined during the year) were vaccinated, of which 29 were successful. All sepoys' children, unprotected, were also vaccinated.

Recommendations. *XX. Recommendations* were made with regard to segregation of small-pox cases, change of clothing, time of parades, &c.

Inspection. Deputy Surgeon-General Tyrrell Ross made his inspection of the lines and hospital on the 10th January 1876. He describes the lines as being very roomy and comfortable; their drainage was well attended to. The men resort to the fields for necessary purposes, but the families have small latrines in the court-yards of their houses. The water is said to be tolerably good, and is from wells. Vegetables were scarce during the hot weather.

Hospital. The sanitary condition of the hospital compound was not such as could be approved of, and the hospital latrine, and the arrangements for the removal of the night-soil from it, were objectionable. The hospital was in good repair, but there was no bath-room or any convenience for bathing attached to it. The instruments were clean and in good order.

Mr. Ross inspected the men in their undress clothes on parade, and describes them as being a very fine set of men, and the recruits were all promising and stout young fellows.

The Deputy Surgeon-General advised a more regular inspection of lines and family quarters, and that printed forms of morning state of hospital should be used; that bath-room furniture should be procured, as also a writing stand and head-rests.

Mhairwara Battalion—Ajmere.

Medical Officer. *I. Medical Officer.*—Dr. T. Murray, by whom the Annual Sanitary Report is written, held medical charge of the regiment during the year 1875.

Year.	Station.	Per Cent. of Strength.		
		Admissions.	Deaths.	Daily Sick.
1871 ..	Ajmere	103·4	1·47	8·79
1872 ...	Ditto	139	2·19	5·44
1873 ..	Ditto	108·7	1·33	4·70
1874 ...	Ditto	139·5	·85	4·84
	Average	122·65	1·46	5·69
1875 ...	Ajmere	123·65	·56	4·79

Location and movements. *II. Location and movements.*—The head-quarters of the regiment have been stationed at Ajmere throughout the year. Detachments of the regiment have been stationed at Todgurh, Beawur and Nawa (Sambhur Salt Lake). They are relieved every three months.

Topography. *III. Topography.*—The topography of Ajmere has already been given.

Meteorology. *IV. Meteorology.*—The total rain-fall was 36·37½ inches, of which 8 inches fell in July, 4·19½ in August, and 17·80 in September. The mean of the thermometer was for April 97°. May 100°, June 101°, January 68°, and December 73°. The rain-fall for 1872, 21·69 inches; for 1873, 21·27 inches; for 1874, 17·75 inches; and for 1875, as already noted, 36·37½ inches.

Lines, barracks and huts. *V. Lines, barracks and huts.*—The lines are situated about a mile and a quarter north-east of the city of Ajmere, on a well chosen site. The streets, eight in number, are wide, and there are rows of trees on either side which afford excellent shelter during the hot season.

Drainage. *VI. Drainage, &c.*—The drainage is described as being good. There are no regimental latrines, and consequently the men have to resort to the primitive plan of visiting the jungles when obeying the calls of nature.

Digitized by Google

The water-supply is from wells, but no description of its quality has been given. The bazar supplies were good and abundant, and their prices were moderate; the clothing has been well suited for the duties of the men. Water-supply, &c.

The medical officer states that blisters of the feet were very common owing to bad fitting boots. Boots.

XIV. Hospital.—This has already been described. It is built of stone and lime, and can accommodate 45 sick. It has an open verandah to the east, and a closed verandah on the west side. There are two thatched houses, about a hundred yards eastward of the hospital, for the accommodation of small-pox cases. The houses of the native assistants are roomy and comfortable, and there are separate houses for the accommodation of the hospital servants. The hospital latrine is convenient and well built, and the dry-earth system is in use. The whole of the buildings are in thorough repair. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	...	618
Absent	...	...	...	...	...	90·53
			Total	...	...	708·53

Station.	Present. From	Present. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Ajmere ...	1st Jan. 1875	31st Dec. 1875	464·13	674	3	27·06	145·21	·64	5.83
Detachment at Beawur ...	Ditto ...	Ditto ...	64·83	21	...	·67	32·38	...	1·03
„ „ Sambhur ...	Ditto ...	Ditto ...	87·	69	...	1·91	79·31	...	2·20
„ „ Escort, Agent Governor General's camp. ...	.....	.....	2·04	...	...	...	...	...	...
Total ...	.....	.....	618	764	3	29·64	123·65	·48	4·79

No. of deaths in hospital 3; out of hospital 1; total	4;	per cent of total strength	...	0·56
„ invalided	28;	„ „	...	3·95
„ sent on sick leave	22;	„ „	...	3·15
„ of days spent in hospital 10,825; per admission 14·17;		per man „	...	15·28
„ „ on sick leave 767; per man 34·86;		„ „	...	1·08
		Total temporary loss of service per man of total strength	...	16·36

XVI. Principal diseases.—Fevers give the largest number of admissions, next rheumatism, conjunctivitis, and blistered feet from defective boots. There were 37 cases of colic, 34 of ulcer, 29 of dysentery, 27 of boils, 22 of dyspepsia, and 20 cases of pneumonia treated; 3 men died at regimental head-quarters and 1 on sick leave— Principal diseases.

2 died of pneumonia.
1 „ concussion of the brain.
1 „ phthisis pulmonalis (on sick leave).

XVII. Epidemics.—No epidemic occurred in the regiment. Epidemics.

XVIII. Vaccination.—Four children were vaccinated in the lines successfully. Vaccination.

XIX. Recommendations.—Cholera prevailed in the city of Ajmere in September; during its prevalence, the men were prohibited visiting the city, with good results. Recommendations.

Inspected by the Deputy Surgeon-General of the Agra Circle on the 6th of March 1876. Dr. Thorpe considers the site of the lines to be one of the best about Ajmere, as it is open to the westerly wind, and well raised. The drainage of the lines is very good, the huts are fairly ventilated, and trees in the lines afford a grateful shade to the men of the battalion. The water supply is abundant and said to be of excellent quality. No latrine system is in use, the men instead resort to the jungle to the east of the lines, outside the cantonment limits, for necessary purposes, and go to a sufficient distance. As the prevailing wind is south-west, no bad smells are said to be perceptible. The supply of medicines was sufficient, and they were of good quality. The instruments were well cared for. Inspection. Water-supply. Latrines. Medicines and instruments.

Digitized by Google

OUDH DIVISION.

(INCLUDING THE STATIONS OF LUCKNOW, SITAPUR, FYZABAD AND GORAKHPUR.)

Average daily strength present during the year	...	Cavalry	778·35;	Infantry	2478·73
„ sick per cent. of average strength	...	„	6·41;	„	4·01
Ratio of mortality per cent. of average strength	...	„	1·28;	„	·88

19th Regiment, Bengal Lancers—Lucknow.

Medical Officers.

I. Medical Officers.—Surgeon D. P. MacDonald was in medical charge of the head-quarters of the regiment from 1st to 23rd January, when Surgeon-Major G. A. Watson, having returned from furlough, resumed charge, and continued to hold it to the end of the year.

The latter officer submits the Annual Sanitary Report.

Year.	Station.	Per Cent. of Strength.		
		Admissions.	Deaths.	Daily Sick.
1870 ...	Mooltan, March 1870 ...	103·2	1·6	4·14
1871 ...	Ditto ditto ...	63·5	1·08	2·58
1872 ...	Ditto ditto ...	111·6	·44	3·16
1873 ...	Lucknow, February 1873	123·1	·43	4·49
1874 ...	Ditto ditto ...	84·07	·21	3·6
	Average	97·09	·75	3·59
1875 ...	Lucknow	104·80	·87	3·76

Surgeon W. Duncan, M. B., was in charge of the detachment at Barrackpore from the date of its arrival till it was moved to Alipore on November 8th, when Surgeon J. C. G. Carmichael, M.D. took medical charge and continued to hold it till December 3rd; from that date to December 20th, Surgeon W. Duncan was again in charge, and from December 20th to the end of the year, Surgeon J. C. Fullerton was in charge.

Location and movements.

II. Location and movements.—The head-quarters of the regiment have been stationed at Lucknow throughout the year. A detachment of the strength of 140, consisting of the 1st and 2nd troops and one European officer, which had marched towards Barrackpore in the previous year, arrived there on January 7th and remained till November 8th, furnishing a small detachment of 40 men for duty at Alipore. On November 8th this detachment marched to Alipore, and was stationed there till the end of the year, a small party of 30 men being left for duty at Barrackpore.

Meteorology and climate.

IV. Meteorology and climate.—The most striking peculiarities of the climate have been that the usual westerly winds were replaced by easterly winds during the latter part of April and May, and that the regular rains were very late in setting in; occasional slight falls had, it is true, occurred during June and the early part of July; but these were very local and varied much in different parts of the district, being less in Lucknow than the surrounding country. It was not till July 24th that the rains fairly set in, and for about a week previous to this, the heat was very great, and some cases of heat-apoplexy occurred amongst Europeans. The rains continued till nearly the end of September, the fall in that month being unusually great. The total fall registered at the Lucknow Observatory was 43·5 inches, but that registered at the Royal Artillery Hospital, which is much nearer to the regimental lines, was 9 inches less; it is quite possible that the greater part of this difference is not due to any want of accuracy in taking the measurements, for the rain, as in former years, was often very local and differed greatly in various parts of the station. The mean temperature of December was several degrees higher than that of past years.

Lines and huts.

V. Lines and huts.—The lines are the same as those occupied last year; the huts were kept in good repair and the ventilation apertures maintained. Mr. Watson reports that these lines have been greatly improved since their occupation by this regiment.

Drainage.

The natural drainage of the lines is very good.

Latrines.

The conservancy arrangements and the position of the latrines were the same as in 1874. The medical officer states that the working of the latrines is not satisfactory, and simply because the accommodation in them is not sufficient for the requirements of the regiment.

Water-supply, &c.

The water-supply was good and sufficient, and in the commencement of the month of May, when cholera was prevalent, the wells in the lines were cleaned out. The arrangements for bathing, washing clothes and watering animals, have been the same as in former years.

Digitized by Google

The bazar has been kept well supplied with the various articles of food, which were sold at a moderate price, and were of good quality. Vegetables were abundant. No cases of scurvy were met with during the year, and no cases of under-feeding came under Mr. Watson's notice. Bazar.

The clothing of the men was of the same description as reported on in 1874. Clothing.

The guard and orderly duties have been rather heavy owing to the reduced numbers at head-quarters, and the men had but 4·77 nights in bed at head-quarters, and 5·42 with detachment at Barrackpore. Duties.

XIII. Marches and service.—The only march during the year was that of the squadron detached to Barrackpore, which completed its march to that station during the first week of January, arriving there on the 7th of the month. The detachment was in charge of 1st class hospital assistant Shaikh Gool Mahomed. There was little sickness, and no events worthy of record occurred. Marches and service.

XIV. Hospital.—The hospital is the same as in former years, and is excellent in every way. The dead-house which had fallen down has been rebuilt, and it is now furnished with a dissecting table. New quarters for the hospital assistants and medical pupils are still a desideratum. A few rezais have been supplied from regimental funds for the use of any patients who may be admitted with insufficient bedding. There are no fire-places in the wards of the hospital, and, indeed, they are scarcely required in this climate. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	... 398·85
Absent	... 59·17
Total ...	... 458·02

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths in hospital.		Admissions.	Deaths.	Daily average sick.
Head-quarter at Lucknow	1st January ...	31st December	263	272	2	10·47	102.43	0·76	3·98
Detachment at Barrackpore	Ditto ...	Ditto ...	135·85	146	1	4·55	107·47	0·73	3 34
Total ...	...	...	398·85	418	3	15·02	104·80	0·75	3·76

No. of deaths in hospital 3; out of hospital 1; total	4;	per cent. of total strength ...	... 0·87
„ invalided	11;	„ „	... 2·40
„ sent on sick leave	2;	„ „	... 0·43
„ of days spent in hospital 5,503; per admission	13·16;	per man of total strength	... 12·01
„ „ on sick leave 550; per man	275;	„ „	... 1·20
		Total temporary loss of service per man of total strength	... 13·21

The number of admissions per cent. of strength has been greater during the past year than in 1874, but less than in 1872 and 1873; greater in the detachment at Barrackpore than at head-quarters. The daily average sick per cent. of strength is less than in 1873, but rather more than in 1872 and 1874, and rather greater at head-quarters than in the detachment. The mortality has been rather greater than in the three previous years, and the percentage of deaths rather greater at head-quarters than at Barrackpore.

The number invalided is in excess of the three previous years, but below the average of the native army generally for some years past. No man has been sent on sick leave from head-quarters, but two were on sick leave at the close of 1874, and the days spent by them on sick leave in 1875 are included in the above calculation. Two men were sent on sick leave from the detachment at Barrackpore. I do not think that the sickness and mortality have been greater than in other regiments or communities in the station. Invaliding.

XVI. Principal causes of sickness.—Ague, as usual, has given rise to far more admissions than any other disease. The total number admitted was 148; but of these, only 52 were at head-quarters, and the remaining 96 in the detachment at Barrackpore: an enormous difference when the relative strength is considered. During their stay at Lucknow, this disease has never been very prevalent amongst the men, and the cases during the past year have been very mild. One cannot but associate this, to some extent at least, with the excellent natural drainage of the cantonment and its neighbourhood. Rheumatic diseases have occurred in about the same proportion at head-quarters as in the two previous years of the regiment's stay at Lucknow, and are above the average of what I have observed in other stations; there were no admissions from this cause in the detachment at Barrackpore. Principal causes of sickness.

There has been only one admission for primary syphilis, a great reduction on the two previous years; but there were four for secondary syphilis. Syphilis.

Digitized by Google

Eye diseases.—Most of these occurred at head-quarters, and were cases of simple conjunctivitis, which soon recovered. The cases of pterygium were operated on.

Respiratory diseases.—There were 23 admissions under this head; all, with one exception, at head-quarters; many of them were from nasal and bronchial catarrh, which were prevalent in the month of September, but not in a severe form. There were 3 admissions from pleurisy and 2 from pneumonia, but no deaths.

Diseases of the digestive system.—Of 42 admissions under this head, 27 were in the detachment at Barrackpore, and of these, 16 were cases of dysentery against 4 from this cause at Lucknow. All the cases of diarrhœa occurred at head-quarters, most of them about the time when cholera was prevalent.

Urinary diseases.—These were principally from gonorrhœa and its complications, and most of them at head-quarters.

Cutaneous diseases.—These have not been either numerous or important; they were chiefly ulcers and boils, and most of them occurred at head-quarters.

Accidental diseases.—There were 74 admissions from this cause, of which only 10 occurred in the detachment; most of them were contusions from falls from horses. The fractures were of the clavicle and small bones of the hand. A recruit who remained under treatment from last year, for fracture of the thigh, was invalided by a special committee and granted a pension.

Principal causes of mortality.

XVII. Principal causes of mortality.—The only two deaths in the head-quarters' hospital were from cholera. The death in the detachment hospital at Alipore was from dysentery, apparently of short duration. It is not certainly known what was the immediate cause of death of the man who died at his home whilst on sick leave. He had been sent on 6 months' sick leave, on 28th December 1874, by my predecessor, and was then said to be suffering from hepatitis and enlarged spleen; his death occurred on the 29th June.

Epidemics.

XVIII. Epidemics.—Cholera has been prevalent in Lucknow in an epidemic form twice during the past year; first in April and May, and again in August, September, and the early part of October; although, as regards the city of Lucknow, there was no very material difference in the severity of the two visitations, as regards other communities there was. In the one the disease was present to a great extent throughout the province of Oudh; in the other to a far less degree and only in certain districts. In the one the native troops and police were attacked whilst the Europeans escaped, in the other the native troops and police were affected but slightly, whilst the Europeans suffered severely. It was only during the first of these epidemics that this regiment suffered. There were in all two cases amongst the sowars, both of which proved fatal; and two amongst the followers, both of which recovered.

Cholera.

The first case occurred on April 20th, and the last on May 19th. Diarrhœa was more prevalent than usual during this time, and some of the cases were very severe. On the 6th April, when the first alarm occasioned by the appearance of the disease in the station occurred, a tent was pitched under a tope of trees, about 450 yards from the hospital, and all cases of cholera were treated in this tent. The men's huts were cleaned and leeped, and their bedding was exposed to the air. The regiment was not moved into camp, but as two cases of cholera and one of severe diarrhœa had occurred in the lines of the 3rd troop, it was moved into the vacant lines of the 1st troop on the 7th May, and remained there till 17th June, when it returned to its own lines. No fresh cases occurred after this movement. Station orders were issued, prohibiting men from visiting the city, and requesting commanding officers to keep them within cantonment limits; these orders were in force up to May 24th. It was supposed by some that the disease was imported into Lucknow by pilgrims returning from a fair on the Ganges on the 5th and 6th April, but the returns published in the *Oudh Gazette* show that 3 deaths occurred from cholera in the city of Lucknow in the week ending April 2nd. In the report which I wrote soon after the disease had disappeared, I stated that I was unable to find any evidence of the importation or propagation of the disease by human intercourse, or infection from the sick, or of its arising from the use of water contaminated by cholera discharges. I expressed my conviction then, as I have so often done before, that it did not originate in this way, for the simple reason that all my experience has gone to show that no germ, poison, or other material substance peculiar to cholera, and to which it owes its origin,

Causation.

exists. My opinion is, that it was entirely due to the state of the atmosphere acting upon persons whose vital condition had been lowered by original weakness of constitution, previous sickness, or exposure to insanitary conditions, or by their habits and mode of life. None of the persons who suffered in this regiment were in really good health at the time they were attacked, and I believe, if careful enquiries were made, this would be found to be very generally the case in all attacks. Quarantine measures did not appear to be of any avail in checking the progress of the disease; the most strenuous advocate of them would not, I imagine, explain the exemption of the European troops at Lucknow in the first epidemic, and of the native troops in the second, to isolation or the action of quarantine. But an explanation of it is, I think, to be found in the fact that the Europeans were probably in better health at the commencement of the hot weather, being well clothed and well fed. They had been invigorated and strengthened by the previous cold weather, and their large barracks, artificially cooled, would prevent them from feeling the first burst of the hot weather to the same extent as natives who had no such advantages. But the reverse of this would be the case at the close of the hot season. The native, whose habits and mode of life are so suited to a hot climate, would be likely to find his health improved, whilst that of the European would be impaired by his confinement to barracks and freer mode of living.

Digitized by Google

A strong proof that the state of the atmosphere was the great determining cause of the spread of the disease is to be found in the fact that in both visitations it appeared and disappeared from the city of Lucknow pretty much about the same time as it did amongst the troops, whether the latter were in camp or cantonments.

The reason, I believe, why the mortality is greatest in the early part of most epidemics is not merely the greater number of persons susceptible of attack, but that the systems of those who have survived the first onset have had time to adapt themselves to the altered condition of atmosphere, and hence they are not again exposed to so rude a shock. That this law obtains in epidemics of other diseases as well as cholera, is, to my mind, a proof of how much atmospheric changes have to do with their prevalence.

If there be any truth in the views here expressed, as we cannot expect to alter materially the state of the atmosphere during cholera epidemics, it is evident that our main hope in the way of prevention must be in the improved sanitary condition of the people, as regards local surroundings, habits and mode of life, and the temporary removal from the area in which the disease is prevailing of those whose vital condition from any cause is depressed.

XIX. Vaccination.—Sixty-seven children and one sowar, a recruit, were successfully vaccinated during the past year. No cases of small-pox have occurred, and I believe the regiment to be well protected. Vaccination.

XX. Recommendations.—These have related to increased attention to conservancy arrangements, improvement of the drainage, cleaning and leeping the huts, and exposure of the men's clothes and bedding to the air during the prevalence of cholera, and to the temporary removal of the 3rd troop to the 1st troop lines; they have always received immediate attention. Recommendations.

This hospital was inspected by Deputy Surgeon-General H. M. Cannon, M.B., on the 20th December 1875. The lines were in good order and well shaded with trees, and the huts were in good repair and well ventilated. There is a good dead-house, but no quarters for the medical subordinates were built. The hospital bath-rooms were supplied with the necessary furniture according to the authorized scale, and with a sufficiency of water. There was no unusual sickness during the year: 2 cases of cholera occurred in the regiment, and both men died. All the details in hospital in connection with the comfort and treatment of the sick were in excellent order. Inspection. Hospital, &c.

6th Regiment Native Light Infantry—Lucknow.

Medical Officer.—Surgeon-Major S. C. Amesbury was in medical charge of this regiment throughout the year, and has supplied the annual sanitary report. Medical Officer.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Morar, January 1870 ...	482·2	1·7	11·
1871 ...	Ditto ditto ...	303·1	·8	7·9
1872 ...	Ditto ditto ...	178 4	1·02	4·9
1873 ...	Ditto ditto ...	136·2	·74	3·8
1874 ...	Lucknow, Nov. 1873 ...	80·16	2·34	2·82
...	Average	236·01	1·32	6·08
1875 ...	Lucknow	110·57	1·05	3·27

Location and movements.—The regiment has remained stationary at Lucknow during the period under review, but furnished a fortnightly guard of 104 men for duty in Fort Muchee Bhawun. The sick from this detachment were treated in the regimental headquarters' hospital, with the exception of the cholera cases, which were sent to the Bulrampore hospital, distant about two and a half miles from the fort. A small establishment has, however, been sanctioned for the native hospital in Fort Muchee Bhawun, *viz.*, a sweeper and a coolie. Location and movements.

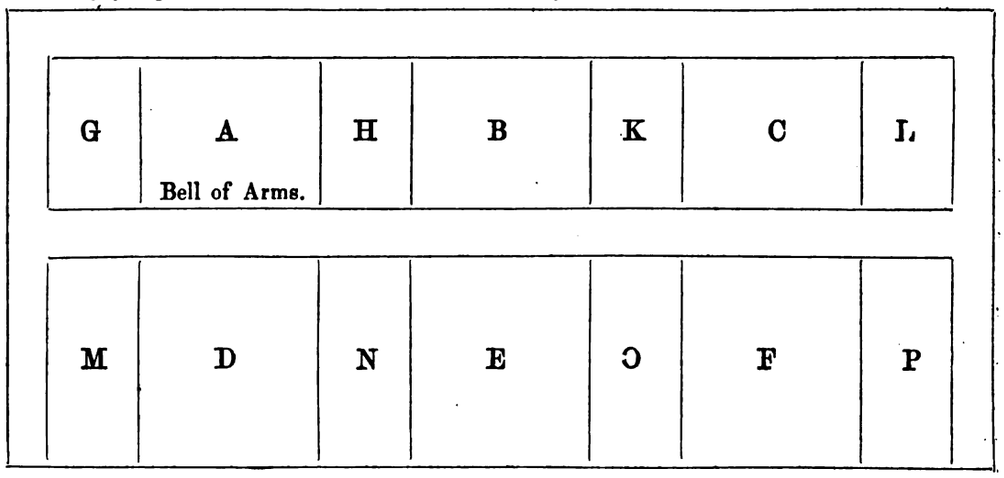
IV. Meteorology.—The month of April is said to have been very hot and oppressive, and a good deal of sickness prevailed then and subsequently. The rains cannot be said to have commenced before the 24th July. Meteorology.

V. Lines, barracks and huts.—The huts have been put in thorough repair, and afford ample accommodation for the men of the regiment; the married sepoys do not live in the lines, but occupy huts near the bazar. With respect to the quarters occupied by the sepoys on duty at Fort Muchee Bhawun, I am not aware that they have been described; I shall, therefore, take the opportunity of doing so here— Lines, barracks and huts.

There is one large two-storied building to the north, inside the fort, the Great Emambara, Arsenal) the lower portion of which is occupied by servants and horses, the two upper flats by

Digitized by Google

the detachment of native troops on guard at the fort. I herewith submit a ground plan of the sepoys' quarters 10 feet to the 1 inch, for ready reference :—



The lower flat delineated by the letters D. E. F. C. B. (A being bell of arms) has a cubical contents of 13,915 with 35 occupants (allowing for the men absent on guard); this gives 397·57 cubic feet or 39·757 superficial feet per man, the room being 10 feet high.

The upper flat has a cubical contents of 17247·5, or an average of 492·79 cubic feet, or 50·77 superficial feet per head, the height of the room being greater. There are fewer windows and doors on this floor, therefore the ventilation is very defective and incomplete. Since writing the above, the number of guards has been increased to 38 instead of 35 on each floor at a time, so that the cubical contents per man is greatly decreased, 366·18 cubic feet in the lower and 453·88 in the upper room. It is plain, therefore, that the cubical contents allotted to the guard falls far short of the authorized amount for well-ventilated quarters per head (600 cubic feet).

In the lower floor, as shewn, each man has only 366·18 cubic feet, and in the upper 453·88 cubic feet, being 233·83 cubic feet in the former and 146·12 cubic feet in the latter less than the standard required for health. Supposing each individual to respire 16·66 cubic feet per hour, the whole atmosphere allotted to him (supposing no fresh air to enter, and not much does) would be consumed in 21·98 hours, with exhalation of 13·73 cubic feet of CO_2 per man in the lower floor in 27·28 hours exhaling 17·05 cubic feet of CO_2 per man in the upper.

It is therefore clear from the above calculation, that there is a deficiency of 14437·5 cubic feet, or, on an average, 189·96 cubic feet per man (it was from this guard that the cases of cholera came). The building is very badly ventilated, close and unwholesome.

Drainage. *VI. Drainage.*—The drainage and conservancy of the lines is reported on as being good.

Water-supply. The water-supply was from wells, and was good and abundant.

The bazar was well stocked with all the usual articles of diet, which were sold at a moderate price, and were of good quality.

Clothing. The clothing was of the same kind as that noticed in the report for 1874. Mr. Amesbury considers that, with their present boots worn without socks, it would be scarcely possible for the men to make a march, or go through a parade, without increasing the numbers of admissions into hospital; there were 62 cases of foot-sores admitted during the year. All the men in this regiment are provided with a suitable kit of undress clothing, and the recruits are also looked after in this respect.

Duties. *XI. Duties and employment.*—When the regiment is on station duty, there are 82 of all ranks as guards and orderlies, but 58 when on fort duties. The men have had light work throughout the year, except in September and October, when there were extra guards required for the cholera camps.

Recruits. There were 48 recruits enlisted in 1875, all of them being a fine set of men promising well.

Amusement. *XIII. Amusement.*—The amusements of the men consist chiefly in gymnastics and occasional pulling in special regimental sports.

Hospital. *XIV. Hospital.*—This establishment has been frequently described in previous reports as excellent in every way and affording ample space for a large number of sick. I give the cubical contents of the four wards of the hospital, allowing 600 cubic feet per man (exclusive of the voluminous ventilation), 75·9 men can be readily accommodated—

	Ward.		Cubic feet.		Superficial feet.
	No. 1	...	20,460	...	1,320
	„ 2	...	23,870	...	1,540
Ophthalmic	„ 3	...	1,216	...	128
Bath-room	„ 4	...	1,216	...	128

Digitized by Google

Number of men for whom the above is intended 75·9; No. 4 is the bath-room completely furnished according to Government directions, and the patients have hot baths whenever necessary. The men generally will not avail themselves voluntarily of this luxury, but cleanliness is enforced in the hospital, the Pathans requiring plenty of washing. Each patient brings his own bedding into hospital, and is there supplied with a pair of sheets and such other medical comforts as are necessary.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	581·5
Absent	82·30
Total	663·80

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Lucknow	1st Jan. 1875...	31st Dec. 1875	581·5	643	5	19·05	110.57	·85	3·27

No. of deaths in hospital 5 ; out of hospital 2 ; total 7 ; per cent. of total strength ...		1·05
„ of invaliding ... ... 10 ; „ „ ...		1·50
„ sent on sick leave ... ... 7 ; „ „ ...		1·05
„ of days spent in hospital 6,861 ; per admission 10·67 ; per man of total strength ...		10·33
„ „ on sick leave 915 ; per man 13·71 ; „ „ ...		1·37
Total temporary loss of service per man of total strength ...		11·70

The principal causes of sickness are shewn in the accompanying tabular form, as compared with 1872-73 and 1874.

	Admissions. 1872	1873	1874	1875	Remarks.
Fevers	664	445	147	223	Fevers of a mild type, generally yielding to quinine treatment; some few cases were very severe and required active treatment.
Syphilitic affections	54	56	67	17	
Affections, Lungs	42	9	15	67	
Ulcers	17	18	18	32	
Blister of feet	66	64	42	62	

The men have been remarkably free from fevers during the past year, while affection of the lungs was on the increase.

XVIII. Epidemics.—Although cholera raged in an epidemic form throughout the district, the sepoys in cantonments remained free from it; but five cases are recorded as having occurred in the regiment, and three of them came from Muchee Bhawun. Epidemics.

XIX. Vaccination.—The Government vaccinator pays his visits periodically for the purpose of vaccinating all such as require it; all the sepoys and recruits have had either small-pox, or been vaccinated, or inoculated. Vaccination.

The hospital of this regiment was visited by the Deputy Surgeon-General of the Lucknow Circle on several occasions during the past year, and on the 20th December he made his annual inspection of it. The lines and huts were in a very satisfactory state, and the drainage was good. Quarters for the medical subordinates and a dead-house had not as yet been built. Dr. Cannon states that he had every reason to be much pleased with the admirable state of the hospital. There was not any unusual sickness in the regiment during the year. Inspection.

Digitized by Google

41st (The Gwalior) Regiment Native Infantry—Lucknow.

Medical Officers.

I. Medical Officers.—The following medical officers have been in charge of this regiment during the year 1875, *viz.*:—

Year.	Station.	Per Cent. of Strength.		
		Admissions.	Deaths.	Daily Sick.
1870 ...	Baxa Doar, December 1868, from Agra ...	134·3	4·2	4·7
1871 ...	Ditto from Agra ...	152·2	2·92	5·95
1872 ...	Ditto from Agra ...	104·9	1·4	3·6
1873 ...	Lucknow, May 1873 ...	116·9	·43	4·43
1874 ...	Ditto ...	105·1	·28	4·09
	Average	122·88	1·84	4·55
1875 ...	Lucknow	78·92	·86	4·33

Surgeon E. Mulvany, from 1st to 6th of January. Surgeon-Major J. Browne, M.D., from 7th January to 1st March. Surgeon E. Mulvany, from 2nd March to 14th May. Surgeon H. P. Yeld, from 15th May to 2nd July. Surgeon-Major J. Browne, M.D., from 3rd July to 31st December. The last named officer has written the Annual Sanitary Report.

Location and movements.

II. Location and movements.—The regiment has been stationed in Lucknow during the entire year, but furnished, with one exception, on every alternate week, a guard of an average strength of 110 men for duty in Fort Muchee Bhawun. The sick from this detachment were treated in the regimental head-quarters' hospital.

Meteorology and climate.

Meteorology and climate.—The year was remarkable for the lateness of the setting in and termination of the rains, and, as might be expected, the hot season was a prolonged and severe one. The rains commenced on the 24th July, and terminated on the 22nd of September.

Rain-fall of wet season of 1875 was	...	42·86 inches.
„ „ „ 1874 „	...	50·23 „
Average rain-fall of wet season in Lucknow is	...	42·87 „

On the termination of the rains the wind changed from east to west, and I believe had an immediate and beneficial influence on the health of the garrison, and brought in early cold weather.

Lines and barracks.

V. Lines and barracks.—A description of the lines occupied by this regiment was given in the report for 1873, page 97, and it will now suffice to state that they are situated on an open site, and are at a distance from the European barracks and the lines of the other native infantry regiment, as not to be unfavourably influenced by any epidemic disease occurring in them. The lines are kept very clean, and are in good sanitary condition; the barracks are in good repair and afford ample accommodation for the men without any overcrowding in them: trees in front of the barracks planted along the sides of the streets afford a grateful shade in the hot season; the barracks run from north to south, so that they are exposed to the prevailing winds, but they are not built in *echelon*, and on this account it might be considered that the perflation through them is defective, but the ventilation of the several barracks is good, and there has been no reason to suppose that any sickness has been caused by deficient perflation of the prevailing winds.

Drainage.

Drainage.—The drainage of the lines is described as being very fair, and this was in a great measure owing to the exertions of the commanding officer, as he had all the old drains kept clean and free from silt, and such new ones made from time to time as the efficient drainage of the lines demanded.

Latrines.

The latrines are on the "dry-earth" system, and are said to answer well.

Water-supply.

The water-supply is from wells, and is good and abundant.

Diet.

IX. Diet.—The bazar has been kept well supplied with all the different articles of food, and the prices of them were at a moderate rate; the supply of vegetables has also been good. A strict supervision is kept up over the bazar and supplies in it, and I have only had on one occasion to report to the commanding officer that the atta was considered to be of inferior quality.

The men in the regiment feed as they like, and I believe that no sepoy, so far as the commanding officer can prevent it, is allowed to stint himself as to the quantity or quality of his food. There is but one Mahomedan company in the regiment, and it is worthy of note that the sepoys in it have maintained a higher standard of health than that of any other company. This is most probably due to the fact that the Mahomedans eat meat, and make use of a more varied dietary than that of the Hindoos.

The Hindoos, as a rule, only consume atta, dhal, ghee, vegetables and milk, and in varying proportions, as some of the castes take a full ration of these articles, while others, such as

Digitized by Google

the Jats, Goojurs and hill-men take what might be considered as a small allowance; however, some men from these latter castes assure me that they cannot consume a larger quantity, as such has always been their usual ration. The Hindoos who eat meat do so so seldom, that this article of food cannot be considered as a part of their ordinary diet.

X. Clothing.—The uniform is well suited for the climate and for the duties the men have to perform. I do not consider that, as a rule, the sepoys when in undress are sufficiently warmly clothed in the cold season, and it is probable that many of the chest and bowel diseases met with during the cold weather are dependent on want of due precaution against cold and chills. Each man when in undress in the cold season should wear a warm *mirzaie*, and of sufficient size as to keep the chest and abdomen thoroughly covered. Clothing.

Boots.—The men wear ammunition boots (bazar made), which seem to be of fair quality, but no matter how well a boot may be made, or how well it may fit the feet, I believe that, without socks or some other protection, the men when marching or employed even on ordinary duties will be rendered more or less ineffective from blisters of the feet; and such protection to the feet is the more necessary, as it is well known how very hard and wrinkled the native prepared leather becomes in the dry weather. Boots.

XI. The men have only had their ordinary regimental and station duties during the year, and these have not proved in any way prejudicial to them.

The non-commissioned officers and men have had an average number of nights in bed as follows—

Havildars	...	...	...	...	... 11·68
Naicks	...	...	...	...	... 6·32
Sepoys	...	...	...	...	... 7·72

XII. Exercise, amusements and occupation.—The regimental and station duties afford the men a sufficiency of exercise without being at all excessive, and they have also to undergo a course of training in the gymnasium. A few of the companies in the regiment keep up gardens, which are a source of healthy and profitable amusements for the men. The possession of private fire-arms in the lines is forbidden, and consequently the sepoys have but few opportunities for any *shikar*. Exercise, amusements and occupation.

XII. Marches and service.—Beyond the march down to Fort Muchee Bhawun on every alternate week, a distant of some four or five miles, the regiment has not been on the march or on service during the past year; a few men have had to go on escort and recruiting duty occasionally, and the regiment has been marched a few miles away from the station for brigade parades. Marches and service.

XIV. Hospital.—The hospital has been described in the report for 1873; it affords ample and suitable accommodation for the sick of the regiment, and has never been overcrowded, as I have for some time past been treating all cases of ulcers and abscesses in a *pál*. The hospital is well lighted and ventilated. Government quarters for the hospital assistants and native medical pupils have not as yet been built, and these subordinates now occupy huts which were built under regimental arrangements close by the range of servants' houses. A dead-house still remains a want. Hospital. Dead house.

The bath-room is commodious and comfortably fitted up; but, owing to caste prejudices, is never made use of, except when a cold or hot bath is ordered by the medical officer. Bath-room.

Occasionally men have come into hospital during the cold weather with an insufficient amount of warm bedding and covering, but this has always been rectified on reporting the matter. As the sepoys when on the march are allowed free carriage for only 15 seers, I suspect they strive as far as possible to keep their effects within this limit, and reduce their bedding and covering as far as they can, in order that their other articles which they consider to be of greater use may be carried free for them.

XV. Sickness, mortality and invaliding.—Strength of the regiment:— Sickness, mortality and invaliding.

Present	...	...	...	...	... 622·11
Absent	...	...	...	...	... 71·07
		Total	...	...	... 693·18

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths in hospital.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Lucknow ...	1st Jan. 1873	31st December 1875.	622·11	491	2	26·94	78·92	0·32	4·33

Number of deaths in hospital 2; out of hospital 4; total 6; per cent. of total strength			...	0·86
„ invalided	34;	„	„	... 4·90
„ sent on sick leave	9;	„	„	... 1·29
„ of days spent in hospital 9,836; per admission 20·03; per man of total strength			...	14·18
„ „ on sick leave 1,164; per man 129·33;		„	„	... 1·67
Total temporary loss of service per man of total strength			...	15·85

Digitized by Google

Principal causes of sickness.

XVI. Principal causes of sickness.—The principal diseases in order of frequency during the past year were as follow: *viz.*, fevers, abscesses (including ulcers and boils), blisters of the feet, syphilis and dysentery.

As compared with 1873 and 1874, the admissions during 1875 from some of these diseases have considerably decreased, as shewn in the following table:—

Years.	Total admissions.	Fevers.	Abscesses, boils and ulcers.	Blisters of feet.	Primary and secondary syphilis.	Chest diseases.	Dysentery.
1873	732	287	44	33	15	34	90
1874	577	153	82	71	38	17	38
1875	491	148	62	52	38	22	32

It is thus seen that the health of the regiment has been steadily improving since arrival in Lucknow, inasmuch as there has been a considerable annual decrease in the total number of admissions, and also in the number of admissions from some of the ordinary diseases.

Cholera.

Cholera.—Cholera appeared in an epidemic form amongst the European troops during the rains, but fortunately this regiment escaped the scourge, as there were but two mild cases from the sepoys, and these were contracted when on duty in the Muchee Bhawun Fort. This freedom of the regiment from cholera in an epidemic form was most probably due to the position of the lines on an open site; to the care and attention bestowed on their cleanliness and good drainage; and also to the order that, on the commencement of the rains, none of the men should sleep outside their huts at night.

Sloughing ulcers.

Sloughing ulcers.—In the earlier months of the year there were a number of sloughing sores under treatment; in some cases ulcers originally healthy began to slough, and in others the sloughing commenced in abscesses and boils; the lower extremities, either the buttocks, thighs, legs or feet, were the parts most generally attacked. I do not consider that this unhealthy action was in any way due to hospitalism, as the hospital was in no degree overcrowded, the ventilation in it was good, and the most scrupulous care was taken to avoid any propagation of the disease by burning the tow, lint, &c., used in cleaning and dressing the sores: the patients, too, with these sloughing ulcers were put into tents, but I did not observe that this change had any immediate beneficial influence on them.

It is most probably, I think, the fact that the outbreak of these sloughing ulcers in the cold weather was mainly due to some constitutional defect, dependent either on an insufficient or unvaried dietary. As a rule, the patients suffering from these sores were evidently in bad health, but none of them had scurvy. From the rapidity with which the sloughing went on, there were in many cases large ulcers left, the healing of which kept the patients for a long time in hospital.

Treatment.

On first coming under treatment, measures were taken to allay the constitutional and local irritation; this being done, great attention was paid to the dietary, and, in some cases, wine or rum was given.

Decoction of cinchona with chlorate of potash and laudanum, or in some cases tinct. ferri perchlorid, was given internally, and locally, I applied HNO3 and lotions of the same with laudanum; and as soon as the sloughing ceased, I found no local application of greater use in causing the separation of the dead structures than the "warm dressing" (made of equal parts of gundaberoza, ungt. resinæ and ol: terebinthinæ) applied in the usual way with a linseed meal poultice over it. After the ulcers became clean and commenced to granulate, I found they healed rapidly by careful strapping and bandaging. I made a good many trials of carbolic acid lotions of various degrees of strength, but found them useless.

Fevers.

Fevers.—The fevers were mostly of the intermittent type and mild, but a patient once attacked was liable to frequent recurrence of the attacks; in these cases the administration of quinine given in quantity proportionate to the severity of the attack, gave the happiest results, and the liquor arsenicalis given in decoct: cinchonæ was also of great benefit.

There were a few severe cases of remittent fever: in one most interesting case the disease commenced as a quotidian with the exacerbations severe, and the intermissions well marked; in it, although quinine was freely given during the intermissions and caused cinchonism, the exacerbations increased in severity and length, until at last the fever assumed a remittent type and the patient rapidly sunk into a low typhoid condition, characterized by a dry tongue, sordes about the teeth and gums, low muttering delirium, subsultus, &c., but he finally recovered by careful nursing, by proper nourishment frequently given, and by a liberal administration of ammonia and wine.

Syphilis.

Syphilis.—There was nothing remarkable in the syphilitic cases, and, considering the facilities the men must have in such a large place as Lucknow for very promiscuous intercourse, the numbers which have come under treatment may not be considered excessive.

Dysentery.

Dysentery.—The cases of dysentery were generally of a mild type, and they all readily yielded to the ipecacuanha treatment.

Principal causes of mortality.

XVII. Principal causes of mortality.—There were but two deaths in hospital during the year, one from pneumonia, and the other from phthisis.

Epidemics.

XVIII. Epidemics.—There was not any epidemic disease in the regiment during the year. This exemption was probably due (as has been already stated) to the open position of the lines and to the great care and attention taken as to their cleanliness, drainage, &c.

Digitized by Google

During the time the epidemic of cholera was prevalent, the men were prohibited from going to any of the bazars or any place else from which reports of the existence of the disease had been received. The detachments of the regiment on their return from escort duty with any of the European cholera camps were put into tents pitched some distance from the lines, and were thus kept in quarantine for a full period of seven days before they were allowed to rejoin.

Vaccination.

XIX. Vaccination.—Most of the men have had small-pox, either natural or by inoculation. The hill-men generally have been vaccinated in childhood and are thus protected; the recruits mentioned in last year's report were vaccinated during the month of January, and in the month of November the Government vaccinator commenced vaccinating the native children in the lines with the full co-operation of the commanding officer. There was but one mild case of small-pox in the regiment during the year.

Small-pox.

Recommendations.

XX. Recommendations.—The only recommendations made during the year were, that tents should be pitched for the treatment of all cases of ulcers and abscesses, and that at the annual whitewashing of the hospital, the walls should be thoroughly scraped. These recommendations were immediately carried out.

Special observations and remarks.

XXI. Special observations and remarks.—The recruits enlisted during the year have been mostly young men of good phisique, and likely to turn out efficient soldiers. The late orders on the subject of recruiting will doubtless tend to ensure the enlistment of promising recruits.

The following table shows the average strength present of each company, the percentage of admissions on the present strength of each company, and the percentage of the admissions from each company to the total admissions during the year :—

Companies.	Average strength present during the year.	Total number of admissions.	Per cent. of admissions on the strength present.	Per cent. of admissions on the total admissions.
A. Brahmins and Rajpoots	80·92	54	66·73	11·00
B. Mahomedans	78·62	42	53·42	8·56
C. Jats	77·68	60	77·23	12·22
D. Dogras	76·97	46	59·76	9·37
E. Hill-men	75·98	75	98·71	15·27
F. Jats	76·82	70	91·12	14·26
G. Goojurs	80·50	80	99 37	16·29
H. Brahmins and Rajpoots	74·62	64	85·76	13·03
Total	622·11	491	632·10	100·00

From this table we may, from a hospital point of view, deduce the following conclusions: 1stly, that the Jats, Goojurs and hill-men have had a large number of men ineffective in hospital; 2ndly, that the Mahomedans and Dogras are the most healthy, and consequently the most efficient soldiers; and 3rdly, that the Brahmins, though healthy when the duty is light, furnish a goodly percentage of the sick in hospital when the drills of the cold weather commence, and during the rains, as the admissions from them were principally during these two seasons. The freedom of the Mahomedans and Dogras from sickness is most probably due to their always using a liberal dietary, as is the larger percentage of admissions into hospital from the other castes very probably due to the want of a sufficiently varied one. The health of the camp-followers has been fairly good. Most of the diseases I have seen amongst them, particularly of the children, have been dependent on preventable causes, or aggravated by the want of sufficient clothing and of good food.

Inspection.

The Deputy Surgeon-General of the Lucknow Circle reports that he had visited this hospital on several occasions during 1875, and he made his annual inspection on the 20th December.

Lines.

The lines were clean and in good sanitary condition. Huts were in good repair and well ventilated, and were not overcrowded.

Bath-room.

Quarters for the hospital assistants or native medical pupils have not as yet been built, and a dead-house still remains a want. The bath-room was comfortably fitted up and was well supplied with water, but, owing to caste prejudice, the Hindoos never used it.

Regarding the rather high daily average number of sick, the Deputy Surgeon-General remarks that it was mainly due to the numbers of ulcers, abscesses, blisters of the feet, and syphilis, and not to any actual sickness. In the early part of the year, sloughing ulcers were rather prevalent, but there has been a gradual improvement in this respect since March last, and at the date of his inspection these ulcers had nearly disappeared.

Hospital.

The Deputy Surgeon-General states that the hospital and all the medical arrangements connected with it were in admirable order.

City Lock Hospital, Lucknow.

City Lock Hospital, Lucknow.—This hospital was inspected by the Deputy Surgeon-General of the Lucknow Circle on the 17th January 1876, and the following information has been gleaned from his report. The hospital is ranked as a 1st class one, and is under the superintendence of Mr. J. C. Wishaw, Civil Surgeon of Lucknow.

Digitized by Google

Statistics.

During 1875, 569 prostitutes were borne on the register, and the daily number of in-door patients for the year was 49·19, or at the rate of 8·64 per cent. of those registered.

The Deputy Surgeon-General reports that everything in connection with the management and establishment was in good order, and the periodical examination of the prostitutes was most carefully conducted.

It seems that a question had been raised by the Local Government as to whether, since the abolition of the practice of taking fees from the registered women in August last, the institution is of sufficient importance in arresting the spread of venereal disease among the civil population for the municipality to incur the entire expense of keeping it up. On this point the Deputy Surgeon-General thus expresses himself: "We spend thousands on drainage and conservancy and other sanitary arrangements, and why should not the municipality spend some of its money in treating and arresting one of the most loathsome and formidable diseases that can be spread amongst any community?"

Cantonment Lock Hopitals, Lucknow.

Cantonment Lock Hospital, Lucknow.—The Deputy Surgeon-General of the Lucknow Circle inspected the Cantonment Lock Hospital, Lucknow, on the 21st January 1876. Surgeon E. J. Fairland, the Station Staff Surgeon, had been in charge of this hospital, which is graded as a 1st class one during 1875.

Statistics.

The statistics of registration of prostitutes were as follow, *viz.*, on the 31st December 1874, 93 were on the register, and, during 1875, 58 were registered, thus making a total of 151. Of these, 50 were removed during the year, so that on the 31st December 1875 there were 101 borne on the register.

The following table exhibits the average annual strength of the registered prostitutes, the number admitted into hospital, and the rate per cent. of admissions on mean strength for the years 1873, 1874 and 1875. It will be noticed that although the numbers of registered women have increased annually, still the average of 103 on the rolls for 1875 seems to be a small number in comparison to the size of the cantonment. The admissions are very high in proportion to the mean strength, but Mr. Fairland states that the cases of 51 unregistered women are included in the admissions of 1875; of 58 of these unregistered women, 51 were found to be diseased, or at the rate of 87·93 per cent, and these women had the option of being punished by the cantonment magistrate, or else of being registered, but they almost invariably accepted the latter alternative, and thus ceased to be a source of danger. Mr. Fairland also states that of 43 women who came during 1875 from distant stations to be registered in Lucknow Cantonment, only 7 were found to be healthy.

	1873.	1874.	1875.
Mean strength on the register ...	79	94	103
Admitted to hospital ...	378	364	506
Admissions per cent. of mean strength.	478·48	387·23	491·26

Average strength	103
„ daily sick	19
Per cent. of mean strength	18·44

Examination.

The examinations were conducted twice a week; on Sundays, by the medical officer in presence of the native doctor and matron, and on Fridays by the two latter officials.

The admissions into hospital from the troops on account of venereal diseases were at the rate per cent. of strength as marginally shewn, and it will be observed that since 1873 there has been a decided increase in them. This increase of venereal disease amongst the European troops, Mr. Fairland attributes to the extraordinary susceptibility of H.M.'s 40th Regiment to attacks of venereal diseases, as well as to the illicit intercourse of the European soldiers with Kunjur women, and with prostitutes in Lucknow City. Mr. Fairland, in his interesting report offers suggestions as to the best mode of dealing with such cases which it is unnecessary to reproduce in this report.

1872	...	18·90 per cent.
1873	...	15·20 „
1874	...	25·54 „
1875	...	34·21 „

Syphilis.

While the prevalence of venereal disease is to be deplored, it is at all events some consolation to be told that a very small proportion of secondary syphilis has resulted from the primary attack.

Digitized by Google

8th Regiment Native Infantry—Fyzabad.

I. Medical Officers.—The following medical officers were in charge of the regiment during the year, *viz.*, Surgeon A. Scott Reid, M. B., from 1st January to 21st December, and Surgeon A. Barclay, from the 22nd to the 31st of December. Medical Officers.

The annual sanitary report of the regiment has been written and submitted by Surgeon D. P. MacDonald, M.D., who relieved Surgeon Barclay of the medical charge on the 26th January last, and consequently Dr. MacDonald's report is but a meagre one.

Years.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870	Alipore, January 1870, from Jhansi ...	238	3·4	6·2
1871	Ditto ditto ...	159·9	3·57	5·4
1872	Ditto ditto ...	244·2	3·13	6·34
1873	Fyzabad, January 1873	110·8	2·63	3·27
1874	Ditto ditto ...	91·2	1·73	2·95
	Average	168·82	2·89	4·83
1875	Fyzabad	122·63	·85	2·78

The regiment was stationed at Fyzabad from 1st January to 26th October, and on this latter date marched to the camp of exercise at Delhi: 170 men under command of an European officer were detached during the march from the head-quarters of the regiment and proceded to Agra, the station to which this regiment was to proceed when the camp of exercise at Delhi was broken up. The head-quarters of the regiment arrived at Delhi on the 1st of December, and remained there till the end of the year. Location and movements.

The water-supply is said to have been good and abundant at Fyzabad, but Dr. MacDonald states that occasionally, during the march, there was a difficulty in obtaining water, as the wells were a long distance from the encamping grounds. Water-supply

No case of under-feeding came under the notice of the medical officer, and the men generally seem to be well nourished. Under-feeding.

The duties were in no way severe or prejudicial to the health of the men. Duties.

The number of continuous nights in bed was 12·45.

XIII. Marches and service.—No record of the details of the march has been kept. There was no serious sickness during the march, but a great number of admissions from "foot-sores," more especially at the beginning. The health of the regiment was also very good at the camp of exercise, and the number of admissions from "foot-sores," while there, was much less than during the march. No serious cases of pneumonia or bronchitis occurred. Marches and service.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	...	638·6
Absent	...	...	...	...	...	63·5
Total	...					702·1

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Fyzabad ...	1st Jan. ...	25th Oct. ...	628	497	2	15·4	93·02	·39	2·4
Ditto on march ...	26th Oct. ...	1st Dec. ...	592	173	...	20·8	288·3	...	3·5
Ditto on Camp of Exercise, Delhi ...	2nd Dec. ...	31st Dec. ...	511	90	1	23·6	210·8	2·3	4·6
Detachment at Agra ...	16th Nov. ...	31st Dec. ...	170·8	23	..	5·4	106·5	...	3·1
Total ...	...	...	638·6	783	3	17·8	122·63	·46	2·78

Number of deaths in hospital 3; out of hospital 3; total 6;	per cent. of total strength	...	8.5
„ invalided 9;	„ „	...	1·2
„ sent on sick leave 13;	„ „	...	1·8
„ days spent in hospital 6,541;	per admission 8·3;	per man of total strength	...	9·3
„ „ on sick leave 1,517;	per man ... 116·7;	„ „	...	2·1
Total temporary loss of service per man of total strength ...				11·4

Digitized by Google

The number of admissions during 1875 has been much greater than in former years. This was owing to the prevalence of "foot-sores" and other affections incidental to marching and camp life.

	1874.	1875.
Admissions	522	783
Invalided	10	9
Deaths	12	6

Invaliding. Of the 9 men invalided, 5 were declared unfit for the service on account of diseases incidental to old age and long service. Of the remaining 4, one had a large spleen, 1 suffered from caries of tarsus, 1 from a severe contusion of the hand, and 1 had his leg amputated while on famine duty.

Principal causes of sickness. *XVI. Principal causes of sickness.*—There has been a marked increase in the number of admissions from the malarial class of diseases. There have been 201 admissions against 140 in 1873. There has been also a considerable increase in the number of admissions from rheumatic complaints. The admissions for blister of feet has risen from 79 to 143.

Principal causes of mortality. *XVII. Principal causes of mortality.*—Three men died in hospital during the year; 2 from dysentery and 1 from ague. Three men also died while on leave at their homes.

Inspection. The Deputy Surgeon-General of the Lucknow Circle made his medical inspection of this regiment on the 12th September 1875. The regiment was to have marched from Fyzabad to the camp of exercise at Delhi on the 26th October, and from thence was to proceed to Agra, the station for which

Lines. it was detailed in the annual relief for the native troops. The lines were well situated, and were kept in good sanitary condition; the ventilation of the huts, though still defective, was considered to be better than is generally met with

Latrines. in native houses. The regimental latrines were a modification of the "dry-earth" system, and they appeared to answer very well. Although the admissions into hospital were more numerous than during 1874, yet the cases of sickness which came under treatment were not so severe. The Deputy Surgeon-General has not made much mention of the hospital arrangements for the treatment and comfort of the sick.

7th Regiment, Bengal Cavalry—Sitapur.

Medical Officers. *I. Medical Officers.*— Surgeon-Major Theobald Ringer, M.D., has held medical charge throughout the year. The detachment at Fyzabad was under the medical charge of Surgeon A. S. Reid, M.B., 8th Regiment Native Infantry.

Dr. Ringer furnishes the Annual Sanitary Report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Nowgong, November 1867, from Lucknow...	227·3	·22	6·99
1871 ...	Ditto ditto ...	239·7	·86	7·34
1872 ...	Sitapore, April 1873 ...	104·7	·66	3·86
1873 ...	Ditto ditto ...	78·3	·22	2·47
1874 ...	Ditto ditto ...	63·1	·44	2·50
	Average	142·62	·48	4·63
1875 ...	Sitapur	69·03	1·32	9·19

Location and movements. *II. Location and movements.*— The head-quarters of the regiment was stationed at Sitapur until 6th November, when it marched to camp of exercise, Delhi, *vid* Shajehanpoor, Bareilly and Moradabad. The detachment at Fyzabad joined head-quarters on 12th October.

Meteorology and climate. *IV. Meteorology and climate.*—The rain-fall during past year was 31·3 inches, being less than the average quantity by about 13 inches. The rains commenced on 8th July and ended on 25th September. The climate may be pronounced as one of the best and most healthy in the plain stations of the Bengal Presidency. The mean of highest temperature during the year was 89·6, of lowest 67·5; mean for the year 88·5.

Conservancy and latrines. *VII. Conservancy and latrines.*—The trench system has been worked for regimental purposes, and has been extensively used by the sowars and camp-followers, and the ground has been brought under cultivation as soon as manured. New burning enclosures were made during the year at the cost of cantonment fund, one at each flank of the lines, where the horse litter was burnt, no other means of disposal being available.

Diet. *IX. Diet.*—During the past year the system of troop messingh as been adopted in the regiment in all the troops except the 4th, which consists of high-caste Hindoos, who will not eat in a body. Two cooks per troop are entertained at Government expense. The system is found to work well, and has considerable advantage over the old system of each man providing

Digitized by Google

and cooking food individually, both in expense, as there is no waste, and in time and labor, as, on a man returning from duty or parade, he finds his food ready cooked. It is also a check to men under-feeding themselves, as a kind of caterer is appointed by themselves who charges each member of the mess an equal share of the expenses. The cooks are of the caste of the men composing the troop. The above arrangement was only rendered possible by the men of the regiment having been re-distributed in their troops, each class being in its own troop: *viz.*, 1st and 2nd troops are Hindoo-Mahomedans, 3rd, Northern men, 4th, Hindoos, and 5th and 6th, Sikhs.

XIII. Marches and service.—The regiment marched from Sitapur on 6th November *viâ* Shajehanpoor, Bareilly and Moradabad, for the camp of exercise, and reached Delhi on 1st December, and was embodied in 4th Cavalry Brigade, 4th Division. From 1st to 18th December it was encamped near the Mobarik Bagh, on the banks of the Jumna branch canal; on the 19th it marched to the vicinity of Sufdar Jung's Tomb, on the high road to the Kootub, distance from Delhi six miles. Here the duties were moderately severe, average period passed on parade being about 30 hours a week. The regiment remained here till end of December. During the period the regiment passed with the camp of exercise, the health of the men was very good. The average nights in bed were as follows:— Marches and service.

Native Commissioned Officers	9
Duffadars	11
Sowars	16

Guard duties were very light, consequent on being reduced to a minimum by G. Os.

The Regiment proceeded to Delhi about 350 strong, as ordered for this and other Cavalry regiments, the other portion of the regiment having proceeded by route march from Shajehanpoor *viâ* Futtehgurh and Mynpoorie, and Agra to Morar. The selection of men for the "Camp" was made with reference to men's previous medical history and fitness for hard work. Selection for the "Camp."

XIV. Hospital.—The hospital has been previously described. Quarters for the hospital assistants and native medical pupils were commenced shortly before departure of the regiment. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment: Sickness, mortality and invaliding.

Present	379·5
Absent	73·9
Total	453·4

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Sitapur	1st Jan. ...	5th Nov. ...	273·5	129	2	10·8	55·7	·86	3·9
„ marching to Delhi ...	6th Nov. ...	30th Nov. ...	383	4	1	4·1	15·1	3·79	1·07
„ at camp of exercise, Delhi	1st Dec. ...	31st Dec. ...	360	48	...	10·3	127·5	...	2·8
Detachment at Fyzabad ...	16th Jany. ...	12th Oct. ...	111·7	76	...	2·7	91·9	...	2·4
„ at Morar ...	13th Nov. ...	31st Dec. ...	87	5	...	7	42·4	...	8·04
Total ...	...	...	379·5	262	3	34·9	69·03	·79	9·19

Number of deaths in hospital 3; out of hospital 3; total 6; per cent. of total strength	...	1·32
„ invalided ... ... 14; „ „	...	3·08
„ sent on sick leave ... ... 7; „ „	...	1·5
„ days spent in hospital 3,736; per admission 14·2; per man of total strength	...	8·2
„ „ „ on sick leave 1,460; per man 208·5; „ „	...	3·2
Total temporary loss of service per man of total strength	...	11·4

XVI. Principal causes of sickness.—The general health of the regiment has been very good throughout the year; total admissions were 262, as compared with 252 in 1874 and 307 in 1873. Malarious fever gave only 50 admissions, 3 less than 1874 and 34 less than 1873, showing that the men have lost the malarious tendency acquired in Bundelkund; dysentery caused 24 admissions against 10 in 1874; conjunctivitis, 15 against 19; acute and chronic rheumatism, 8 against 18; venereal affections, 7 against 14; contusions and accidents of various kinds incidental to the cavalry soldier have caused nearly ¼ of total admissions. Principal causes of sickness.

XVII. Principal causes of mortality.—Three deaths occurred in hospital, 1 from disease of heart, 1 from stomatitis, 1 from diarrhœa. Three deaths occurred on furlough and command. Mortality.

Camp of Exercise, Delhi—Health.—The health of the regiment was very good during the whole time they were under canvas, both on the march from Sitapur to Delhi, and at the camp of exercise during the month of December, and was never injuriously affected by exposure, fatigue, or irregularity with which the men got their meals. No serious accidents occurred, which I attribute to the fact that the men are very well mounted. Although the duties were severe and the work of the camp really hard, the night duties were very light, Camp of Exercise, Delhi. Health.

Digitized by Google

and to this circumstance, no doubt, the principal cause of the good health of the regiment may be attributed.

Inspection. *Inspection.*—The Deputy Surgeon-General of the Lucknow Circle made his inspection of the hospital and lines of this regiment on the 28th September 1875. He reports that the regiment had been very healthy during the year.

Hospital. He found every thing in hospital complete and correct; the men had a sufficiency of sheets and bedding; the water-supply for both the lines and the hospital was abundant and of good quality; the bath-room was furnished in accordance with Government orders, and was fairly resorted to by the men.

Detachment 7th Bengal Cavalry, Fyzabad. *Detachment 7th Regiment Bengal Cavalry, Fyzabad.*—Mr. Cannon inspected this detachment on the 12th September 1875. He reports that "the lines are high and dry, and well ventilated." There were no bed-head tickets in the hospital, and no gurrahs for water in the bath-room. The medicines and books were complete and in good order.

This detachment was to have marched on the 1st of October to join the head-quarters at Seetapore *en route* for the camp of exercise at Delhi.

Lock hospital at Sitapur. *Lock hospital at Sitapur.*—The lock hospital at Sitapur was inspected by the Deputy Surgeon of the Lucknow Circle on the 27th September 1875.

This institution, graded in the 2nd class, was under the superintendence of Surgeon-Major T. Ringer, 7th Regiment, Bengal Cavalry, from the 1st January to 31st October, and Surgeon J. W. Martin, Army Medical Department, from the 1st November to 31st December.

Statistics. The average number of prostitutes on the register for the year 1875 was 99, and the average number in hospital was 8, or at the rate of 8·08 per cent. of mean strength. It appears from Surgeon Martin's report that there was an increase in the amount of disease amongst the troops, but a diminution of it in its more virulent forms.

Examination. The Deputy Surgeon-General on the morning of his inspection made an examination of 85 women, and reports that not one of this number was found by him to be suffering from venereal disease of any kind, although amongst them there were 5 prostitutes who had been identified by soldiers within three days preceding his inspection as having infected them.

Unregistered women. It is worthy of remark that of 32 unregistered women who had been captured by the police, 16 were found to be badly diseased.

The Deputy Surgeon-General expresses himself as much pleased with all the arrangements in the institution for the care and treatment of the inmates, and concludes his inspection report by remarking: "I am of opinion that, with the admirable lock hospital arrangements introduced by Dr. Ringer, and the special police measures that are now being adopted at Sitapur, there is every reason to hope for still more favourable results during 1876."

1st Regiment Native Infantry—Gorakhpur.

Medical Officer. *I. Medical Officer.*—Surgeon A. McM. Paterson held medical charge during the year, and furnishes the Sanitary Report.

Location and movements. *II. Location and movements.*—The regiment was stationed at Gorakhpur during the year.

Drainage. *VI. Drainage.*—The drainage of the lines and station worked satisfactorily during the rains. The "trench system" of latrine was in use in the lines.

Water-supply. The water-supply is from wells, and is of good quality and abundant. During 1875, thatched roofs were put over the wells so as to prevent, as much as possible, decayed leaves falling down the wells, and thus contaminating the water.

Years.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Agra, November 1868, from Dum-Dum.	127·1	1·89	4·05
1871 ...	Ditto ditto ...	188·8	1·42	5·78
1872 ...	Gorakhpur, October 1872	282·5	1·47	6·13
1873 ...	Ditto ditto ...	160·7	1·17	5·44
1874 ...	Ditto ditto ...	88·7	·43	3·84
	Average	169·56	1·27	5·05
1875 ...	Gorakhpur ...	181·61	·42	5·58

Digitized by Google

The men appear to be well nourished, and the bazar has been inspected weekly by the Medical Officer.

The duties of the men in such a small station have been necessarily light; they have had upwards of 8 nights in bed. Duties.

XIV. Hospital.—The subject has been fully entered upon in former reports, *vide* 1872-73. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment:— Sickness, mortality and invaliding.

Present	...	...	...	...	...	...	636·52,
Absent	...	...	...	...	...	...	64·20;
					Total	...	700·72

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Gorakhpur.	1st Jany.	31st Dec. 1875.	636·52	1,156	1	35·51	181·61	·16	5·58

Number of deaths in hospital 1; out of hospital 2; total 3; per cent. of total strength			...	·42
„ invalided	... ...	18; „ „	...	2·77
„ sent home for change of climate	...	7; „ „	...	·99
„ of days spent in hospital 12,480; per admission		10·79; per man of „	...	17·81
„ „ on sick leave 1,281; per man		1·83; „ „	...	1·82
Total temporary loss of service per man of total strength			...	19·63

XVI. Principal causes of sickness.—The principal diseases the men suffered from this year are—15*a* ague, 466 dysentery, 38 rheumatism, 43*a* primary syphilis and 43*b* secondary syphilis. Principal causes of sickness.

The most prevalent cause of sickness has been intermittent fever, giving an admission of 753 into hospital this year; the fever is attributable to the immediate proximity of a large jheel lying to the south-east end of the station and lines of the regiment; this, during the rainy season, is under water for miles, and after the rains a gradual process of drying goes on whereby malaria is generated, and in consequence fever produced. The months when fever is most prevalent are October, November and December. The fever in most cases has been mild and of short duration but in others it was of long duration, weakening and yielding slowly to quinine, as well as frequently accompanied by congestion of the spleen, "ague cake." In some cases bronchitis followed and in many cases dysentery, which latter disease was amenable to ipecac. and quinine in large doses. Cause of fever.

XVII. Principal causes of mortality.—Notwithstanding the very large amount of sickness in the regiment during the year, there was only one death in hospital, and this was a case of remittent fever. Two men died out of hospital, one on sick leave for phthisis, and the other died at his home on temporary leave, the cause could not be asertained from the Magistrate of the district, or from his people. Principal causes of mortality.

XVIII. Epidemics.—There were no epidemics in the regiment. One case of cholera occurred in April last, which did not prove fatal. Epidemics.

XIX. Vaccination.—The number vaccinated during the year 32 { Successful ... 15 / Failure ... 17 Vaccination.

The majority of the men are either protected from small-pox by vaccination, or previous attacks.

The Deputy Surgeon-General of the Allahabad Circle made his medical inspection of this regiment on the 18th March 1876. He reports on the water supply, drainage, conservancy, and latrines as being very satisfactory, but noticed a strong ammoniacal odour in the company urinals, which was apparently caused by the ground around the vessels having become saturated with urine; and to remedy this defect, Dr. Walker ordered a thick layer of fresh earth to be placed once or oftener in the twenty-four hours under and around the urinals, the soiled earth having previously been removed. Inspection.

All the men of the regiment who were off duty were inspected, and they presented a very satisfactory appearance; the recruits were considered to be a promising and well-selected lot of young men. Everything connected with the hospital was in excellent order, and the treatment of the patients, general and therapeutic, was well carried out. The subordinate medical establishment was favorably reported on. Recruits.

The officer in medical charge of the regiment considered that a "dead-house" was essential, and that hospital bedding was necessary; but Dr. Walker did not consider it advisable to support either suggestion. Dead-house.

Digitized by Google

MEERUT DIVISION.

INCLUDING THE STATIONS OF MEERUT, AGRA, DELHI, DEHRA DUN AND ROORKEE.

Average daily strength present during the year	... Cavalry	492·7	Infantry	4190·8
Average daily sick per cent. of average strength	... „	2·13	„	3·33
Ratio of mortality per cent. of average strength	... „	1·25	„	1·59

4th Regiment Bengal Cavalry—Meerut.

Medical Officers.

I. *Medical Officers.*—Surgeon E. Palmer held charge of the corps from the 1st to the 31st January, when he was relieved by Surgeon J. S. Gunn, M. B., who remained in charge to 3rd June. From that date till the 31st October, during the absence of Surgeon Gunn on sick-leave, the medical charge was held by Surgeon J. L. Corbett, M. D.

On the 31st October Surgeon Gunn resumed charge, and remained in charge of the depôt at Meerut till the end of the year, Surgeon Corbett proceeding to the Camp of Exercise in charge of the head-quarters.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Segowlie, December 1869	83·2	1·9	3·2
1871 ...	Ditto Ditto ..	42·3	·8	2·5
1872 ...	Ditto Ditto ...	42·3	1·9	1·9
1873 ...	Meerut, November 1873	34·7	·6	1·1
1874 ...	Ditto Ditto ...	172·	·6	5·1
	Average ...	74·90	1·16	2·76
1875 ...	... ...	68·86	1·10	1·55

Surgeon J. S. Gunn, M. B., writes the annual sanitary report, and in it gives a very full and interesting account of the sanitary and medical state of the regiment for 1875.

Location and movements.

II. Location and movements.—The head-quarters were stationed at Meerut from the 1st January to the 3rd March; in camp at Delhi from the 3rd March till the 3rd April; at Meerut from the 3rd April till the 15th November; at the Camp of Exercise from 15th November till the 31st January. A detachment of the regiment was stationed at Delhi from the 1st January till the 25th September. A detachment was also stationed at Agra from the 1st January to the 25th September. A depôt was stationed at Meerut from the 3rd March to the 3rd April, and from the 15th November to the 3rd December.

Detachments.

Topography.

III. Topography.—Under this heading, it may be noted that the deep ravine which runs between the European and Native lines, called the "Aboo Nallah," has been widened, deepened and thoroughly cleaned during the year. This measure has had no apparent effect on the level of the sub-soil water, which has been steadily rising throughout the year.

Lines.

V. Lines.—No changes have been made in the lines during the year. They are in good repair.

Drainage.

VI. Drainage.—As described in last report. The surface drains on which the lines are entirely dependent for their drainage are reported to have worked efficiently during the year, having been kept clean and open. The greater part of the surface water is carried towards two large tanks, situated about 800 yards to the south-east of the lines. The drainage of the west part of cantonments has, I suppose, been improved by widening the Aboo Nallah.

Conservancy, and latrines.

VII. Conservancy, and latrines.—The mud-built latrine for the use of the regiment, the inefficient condition of which I noticed in last year's report, is still in use. It has, however, been thoroughly cleaned out, and releeped; the filth is punctually carted away daily; and, as the whole number of compartments has been divided between the Mahomedans, Hindus and the camp-followers, each division having its name written on a board, the latrine is now less unpopular, and answers its purpose more satisfactorily than it did before. The latrine still requires a light roof, sufficient to protect the compartments during rain, but well raised above the walls so as to permit of free ventilation. The regimental bazar has been kept clean.

Water-supply.

VIII. Water-supply.—The water-supply, as stated in former reports, is obtained from large masonry wells, which are sufficiently protected from surface pollution by broad, well-raised sloping platforms. Attached to each well are masonry troughs, from which the horses may be watered. There are numerous masonry wells scattered over the plain in the vicinity of the lines, one or two of which are taken advantage of by dhobies and by the sowars for bathing, but most of them lie unused, the water being impure. About 800 yards to the south-east of the lines there are two large open tanks which receive all the surface water from their immediate neighbourhood; but, although most suitable places for bathing, they do not attract many of the men, the distance from the lines being probably further than convenient. The drinking water in the lines is considered to be very good and wholesome.

Diet.

IX. Diet.—All articles of food have been reported as of good quality. The usual articles of diet are abundant and comparatively cheap at this station. No cases of under-feeding or improper feeding came under the notice of the Surgeon during the year. As usual in this regiment, samples of the various grains and articles of food have been brought before the Regimental Surgeon daily.

Digitized by Google

X. Clothing:—As described in former reports. Clothing.

XI. Duties.—The average number of nights in bed for the year has been 4·1. While the regiment formed part of the force encamped at Delhi during the visit of the Viceroy, there was a good deal of escort duty; and, of course, during the Camp of Exercise the regiment underwent much of the hard work and exposure incidental to actual service. Surgeon Corbett, who has been in charge of the head-quarters during these manœuvres, reports that the men were often eight and nine hours in the saddle; but, as this hard work alternated with frequent holidays, the health of the men improved rather than deteriorated under it. Duties.

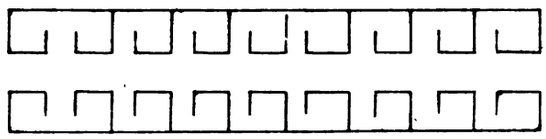
XIII. Marches and service.—On the 3rd March the head-quarters of the regiment marched for Delhi to join the camp of the Governor-General, leaving behind at Meerut a small detachment of 70 men for the purpose of looking after the lines and carrying on the orderly duties of the station. Marches and service.

The encamping grounds between Meerut and Delhi are Begumabad, Ghazeeabad, and Shahdara. All were clean and dry, with an ample and pure supply of water from masonry wells. On the march, the hospital had a site immediately behind the tent of the medical officer. Hospital. None of the encamping grounds have trees conveniently available for shade.

The regiment reached Delhi on the 6th and encamped on cultivated land skirting a canal (Nujjupgurh Jheel escape), which runs parallel to the "Ridge" towards the river Jumna. Here the regiment had the advantage of every condition, except the shade of trees, which should belong to military encampments: the ground was clean and well drained; there was an excellent and sufficient supply of drinking water from two masonry wells; while immediately behind the camp ran the canal, containing a considerable stream of fresh water available for watering the horses and for ablution of the person and clothing.

There are several wells spread over the ground here, but only a few contained good potable water, and these were numbered and marked off for use, the others being closed up. The hospital pals on this occasion were pitched outside the east wall of the old military grave yard in the shade of an immense pepul tree. The ground was first levelled and afterwards leeped every morning, and as there was a liberal supply of straw, the patients were exceedingly comfortable and clean. Water for the hospital was obtained from the regimental bazar well, the water in the well at the hospital being very impure. Water-supply in camp.

No effort was spared to maintain efficient conservancy. The latrines for the use of the regiment were situated behind a small eminence about 300 yards to the rear of the camp. They consisted of two rows of trenches concealed by mat screens divided into 24 compartments after the manner of the diagram below, which secured the utmost privacy with the freest ventilation. Conservancy in camp.



Besides those for the sowars, there were others on the same principle for the camp-followers and for the women and children. At first the cropped ground near the camp was a good deal fouled by camp-followers and others; but castigation of one or two delinquents, who were caught in the act after a stringent prohibition had been issued, had a most salutary effect in securing the popularity of the latrines. The regiment returned to Meerut on the 3rd April, having been absent thirty-one days.

On the 15th November, the head-quarters marched to Delhi, leaving a small detachment at Meerut, to take part in the Camp of Exercise. Surgeon Corbett, M. D., proceeded in charge of the regiment. He reports that the encamping grounds on the route were clean. The regiment arrived at Delhi on the 17th, and encamped on a plain about 2½ miles from the city, where the ground was well drained and clean, and where the supply of water was procured, partly from a branch of the river Jumna, and partly from wells which were in bad repair. The supply of water was here sufficient, but of indifferent quality, containing a large amount of inorganic suspended matter, to which Dr. Corbett attributes the occurrence of several cases of dysentery and disordered bowels among the men. Camp of Exercise.

The regiment remained on this site till the 2nd December, when it joined the brigade of which it formed a part during the manœuvres. From this time till the end of the year it was encamped immediately beyond the canal previously mentioned, on open cultivated land, the canal being in rear of the camp. Here the regiment procured its supply of drinking water partly from shallow wells made by the Quatermaster General's department for the use of the regiment, partly from one semi-pucca well situated to the right front of the camp, and partly from the canal. The supply was sufficient; but Dr. Corbett reports that the water in the shallow wells was so impure as to be unfit for drinking purposes; that the canal water must have been subject to pollution from the troops encamped higher up; and that only the semi-pucca well afforded at all a satisfactory potable water. Water-supply.

The trench system of conservancy on the principle already detailed was carried out with admirable success. Dr. Corbett writes:—"The food in the bazar was always of good quality, and none of the men seemed to stint themselves as regards quantity." Conservancy. Food.

Digitized by Google

Health of the regiment.

The health of the regiment has been excellent throughout. Dr. Corbett reports the prevalence of mild diarrhœa and dysentery, at first owing to the impurity of the water and to night exposure; which he counteracted as much as possible by recommending the drinking water to be drawn exclusively from the semi-pucca well, which alone contained water of fair quality, and by warning the men against using for culinary purposes either the water from the canal or that from the shallow wells.

Weather in camp.

The weather is reported as having been favourable throughout. There were some cloudy days, but no rain fell. In anticipation of rain the ground was drained by a party of sappers.

Hospital.

XIV. Hospital.—During the year a new flag floor has been laid down; shallow masonry drains have been made for the escape of waste water from the bath-rooms; trees have been planted round the building, and one side of the hospital has been furnished with partially-glazed doors. All that remains now is the repair of verandah rooms, the floor of which is "kutcha" and broken down, and to complete the glazing of the doors; but these repairs have been discontinued for the present on account of the want of funds. If a small room were added for the isolation of serious cases of illness and for the treatment of eye diseases, this would be as complete and perfect a hospital as could be desired for a native cavalry regiment. Dry-earth conservancy has been observed during the year, and has been closely attended to.

Conservancy.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	...	412·4
Absent	...	...	...	...	42·2
				TOTAL ...	456·6

STATION.	PERIOD From	PERIOD To	Strength.	TOTAL NUMBER OF Admissions.	TOTAL NUMBER OF Deaths.	Daily average number of sick.	PER CENT. OF STRENGTH PER ANNUM. Admissions.	Deaths.	Daily average sick.
Head-quarters at Meerut and Camp of Exercise at Delhi.	1st Jan. 1875	31st Dec. 1875	318·8	210	2	5·12	65·87	·62	1·60
Detachment at Agra ..	„ „	25th Sept. 1875	43·6	16	...	·88	40·71	...	2·02
„ at Delhi ...	„ „	„ „	47·4	48	1	1·11	112·27	2·34	2·34
Depôt at Meerut ..	3rd Mar. 1875 / 15th Nov. 1875	3rd April 1875 / 31st Dec. 1875	70·8	10	..	4·20	66·07	...	5·93
TOTAL ...	.....	... ...	412·4	284	3	6·42	68·86	·73	1·55

Number of deaths in hospital 3; out of hospital 2; total	5·; per cent of total strength	...	1·10
„ invalided	14·; „ „	...	3·07
„ sent on sick leave	5·; „ „	...	1·10
„ of days spent in hospital 2,342; per admission	8·2; per man of total strength	...	5·13
„ „ on sick leave 487; per man	97·4; „ „	...	1·07
	Total temporary loss of service per man of total strength	...	6·20

Principal causes of sickness.

XVI. Principal causes of sickness.—The principal causes of sickness during the year have been malarious fevers, 127; injuries, 46; dysentery, 29; ulcer and boil, 21; conjunctivitis, 11; rheumatism, 8; affections of respiratory organs, 8; and venereal diseases, 3.

Compared with the preceding year, the returns of 1875 would indicate that the health of both the 4th Bengal Cavalry and 5th Native Infantry has decidedly improved; there being 340 fewer admissions from all causes in the former, and 826 fewer in the latter, regiment. On examining the figures, however, it is seen that this great difference between the sickness of the two years is altogether due to the decrease in admissions from malarious fevers in 1875, the admission from all other causes being much the same for both years. Dr. Moir informs me that malarious fever had been increasing steadily in the station and district of Meerut from 1869 up to the end of 1874; but that throughout 1875, there has been a very marked decrease, the admissions from fever in the sudder and city dispensaries in this year being 47 per cent. less than in 1874.

Malarious fever.

Principal causes of mortality.

XVII. Principal causes of mortality.—Cholera has caused all the deaths which occurred in hospital during the year, three men having died from this disease. Two men died while on leave at their homes; the cause of death has not been reported.

Epidemics.

XVIII. Epidemics.—The district and station of Meerut experienced a sharp outbreak of cholera during the year. Although cholera did not enter cantonments till August, the epidemic may be said to have commenced in June; the first death in the district having been registered on the 15th of that month. From this time the disease rapidly increased in extent and virulence; 15 deaths having occurred in the district in June, 144 in July, 368 in August, and 483 in September, after which month there was a sudden abatement, only 13 deaths having been registered in the district in October, and none after that. The first death in the city took place on the 12th August and the last on the 5th October.

Cholera.

Cholera attacked the troops in August; the first case occurred on the 26th in the Royal Artillery, and the last case on the 7th October in the 15th Hussars. The first case of cholera in the 4th Bengal Cavalry occurred on the 5th September, and the last case on the 21st September. The first case in the 4th Bengal Cavalry was a sowar who was attacked on the morning

Digitized by Google

of the 5th. Previous to attack he was quite well. The disease passed through the stages of collapse, with suppression of urine, and re-action, and terminated fatally by secondary fever and uræmic poisoning. The next case among the men occurred on the 15th; the attack also commencing in the early morning, and passing rapidly into collapse, from which there was no rally, death taking place in 8 hours after admission. From the 12th to the 21st September, 9 cases occurred among the camp-followers of the regiment, and of these, 3 died and 6 recovered. They were treated by the Staff Surgeon in a temporary hut erected for the emergency. Most of these cases, including the two sowars who died, having occurred in the 6th troop, this troop was placed in tents on the neighbouring *maidan*, and its lines thoroughly cleaned and disinfected.

Altogether, throughout the outbreak, 1,023 deaths took place in the city and district of Meerut, 15 admissions with 10 deaths occurred in the Artillery, 2 admissions in the 15th Hussars, 1 admission in the 85th Regiment, and 11 admissions with 5 deaths in the 4th Bengal Cavalry. The 5th Native Infantry had a complete immunity, no case having occurred in this regiment. One case of cholera occured in the Delhi detachment of the 4th Bengal Cavalry, and ended fatally in the stage of collapse about 8 hours after attack. Mortality.

XIX. Vaccination.—No vaccinations were effected during the year. Vaccination.

XX. Recommendations.—These have had reference to conservancy and other conditions affecting the health of the corps, and have always received the prompt and cordial attention of the officers in command. Recommendations.

Remarks by the Officer Commanding.—I have nothing to add to the above complete and interesting report, but the remark that, except when the regiment was stationed in Scinde, I never remember so many cases of malarious fevers as occurred in 1874. The causes must have been widespread, not merely local, as the whole district suffered in like proportion. Remarks by the Officer Commanding.

Inspection.—Mr. C. M. Smith, F.R.C.S., Deputy Surgeon-General of the Meerut Circle, made his inspection of the hospital and lines of this regiment on the 12th November 1875. He reports that no change has been made in the lines since his last inspection, but that the huts were in good repair, and the cleanliness and conservancy of the lines were well looked after and were quite satisfactory. Inspection.

The brick floor in hospital had been replaced by large flags of red sandstone imbedded in cement. Mr. Smith objects to this kind of floor on the following grounds:—"In the first place, the stone itself is porous, and readily absorbs any liquid matter thrown upon it; and secondly, there is always a difficulty in laying it down evenly, which renders the joinings liable to open, and to admit the fluid portions of excreta, &c., that may be spilt upon it, and which cannot then be got rid of effectually without the removal of the entire flooring. This condition might give rise to, and assist in, the propagation of infectious diseases. The flag floor has, however, a very neat appearance, and its surface can always be kept clean from dust and litter."

The hospital arrangements were all in a satisfactory condition.

5th Regiment Native Infantry—Meerut.

I. Medical Officers.—Surgeon-Major Perkins held medical charge of the corps from the 1st January to the 3rd April. Surgeon J. L. Corbett, M.D., succeeded to the medical charge of the regiment on the 4th April, and held it up to the 4th August. Surgeon A. Barclay, M.B., was in medical charge from the 5th August to the 30th November, on which date he was succeeded by Surgeon J. S. Gunn, M.B., who remained in charge to the end of the year, and by whom the annual sanitary report has been written. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Benares, January 1868, from Dacca.	110·1	·8	5
1871 ...	Ditto ditto ...	101·5	·7	3·5
1872 ...	Meerut, November 1872.	173·7	·8	4
1873 ...	Ditto, ditto ...	241·1	·9	5·4
1874 ...	Ditto, ditto ...	250	1·9	5·4
	Average	175·28	1·02	4·66
1875 ...	Meerut	86·81	·2	2·35

II. Location and movements.—The regiment was stationed at Meerut from the beginning of the year to the 3rd of March. On that date the head-quarters marched to Delhi, arriving there on the 6th, and occupying the ground on the east side of the "Ridge" on the 3rd April, when returned to Meerut, where it has been stationed during the rest of the year. A detachment Location and movements.

Digitized by Google

of the regiment, consisting of a wing, with two European officers, proceeded to Umballa on the 1st November, and have been encamped there up to the 31st December.

Meteorology. *IV. Meteorology.*—The hot season was considered comparatively mild, and the rains, although late in coming, were unusually heavy and prolonged.

Lines and barracks. *V. Lines and barracks.*—These lines have been very fully described in former reports, and no changes have taken place during the year. They are the best native lines I have seen in India. The streets are broad, and the huts commodious, well-built, and sufficiently shaded by trees; the water-supply is ample and good; the wide, open plain extending southwards, northwards, and westwards promotes free perflation of air; and altogether these lines have the appearance of much comfort, while they are at the same time invariably kept scrupulously neat and clean and in excellent sanitary condition.

Drainage. *VI. Drainage.*—The drainage, as usual in native lines, is effected by surface drains, and no change has taken place in the system since Dr. Perkin's last report. It appears to have worked satisfactorily during the year in the lines; no water having at any time lodged in the streets, although beyond the lines the open ground to the east, which is low and has no drainage outlet, was in a swampy state during the rains.

Conservancy. *VII. Conservancy and latrines.*—The conservancy arrangements are reported to have worked well during the year. The regimental latrines are those described by Dr. Perkins, and seem to be exclusively used by the men, as much, perhaps, that they are suitable, as because there is little cover in the neighbouring fields, except at an inconvenient distance. The quarter-master informs me that the iron urinals mentioned by Dr. Perkins in his report for the year 1873, are still in use, and are found to save the ground in the lines from pollution of this kind.

Water-supply. *VIII. Water-supply.*—The supply of water continues as before — abundant and good.

Diet. *IX. Diet.*—Supplies of all the staple articles of food have been abundant. No complaints have been made regarding its quality. All articles of food are, I understand, inspected by a bazar committee, consisting of native officers, who, I suppose, will readily condemn articles of inferior quality. There is nothing in the hospital records to show that the men have underfed themselves; moreover, from what I have seen of the men, I believe that the practice, if it exist at all, must be rare in this regiment.

Clothing. *X. Clothing.*—Remains as before. I lately inspected the men in undress for the purpose of ascertaining to what extent vaccination had been completed in the regiment, and I then noticed that every man was provided with a good quilted coat. No man, so far as I have seen, has presented himself at hospital unprovided with a rezai.

Duty and employment. *XI. Duty and employment.*—The nights in bed have varied from 2 to 6, the average for the year being 4·37. There is no evidence to show that the men have been at all overworked during the year; on the contrary, they are on the whole looking extremely well now, and for the past two months there has been very little sickness of any kind in the regiment.

Exercise. *XII. Exercise.*—The men are very fond of gymnastic exercises, and seem to have derived much benefit from them.

Marches and service. *XIII. Marches and service.*—The regiment has remained at Meerut throughout the year, except during the month of March, when it formed part of the force stationed at Delhi on duty in connection with the visit of the Governor General. The regiment, on this occasion was encamped on cultivated land immediately beyond the "Ridge"; in fact, on the ground formerly occupied by the old Native Infantry lines before the "mutiny."

Water-supply in camp. *Water-supply in camp.*—The supply of drinking water was here obtained from masonry wells, in certain of which the water was pronounced to be good; while for ablution of the person and clothing, a canal running close by the camp was found to be very convenient.

Conservancy in camp. *Conservancy in camp.*—Screen latrines on the trench system were erected for the regiment at a convenient distance from the camp, and although at first some little difficulty was experienced in getting the men to use these latrines, as they preferred the open fields, eventually the sanitary arrangements of the camp were got to work very smoothly and satisfactorily.

Detachment. *Detachment.*—The left wing of the regiment marched on the 1st November for Umballa, where it arrived on the 13th November. This detachment has remained at Umballa up to the close of the year, and has been encamped "on a healthy site somewhat to the west of the Native Cavalry lines."

Food supplies. *Food supplies.*—The supplies of food have also been good, with the exception of atta, which was reported by the medical officer as being of inferior quality on one occasion. The bunneahs having been cautioned, a better quality was obtained.

Hospital. *Hospital.*—The sick of the detachment have been treated in the Native Cavalry hospital, which is reported to afford good accommodation.

Hospital. *XIV. Hospital.*—No changes of any importance have been effected in this building durign the year. It is in good repair. A small ward for isolating cases of serious illness and for the treatment of eye diseases is certainly much wanted, as the end verandah rooms are too small for this purpose, and are only useful as store-rooms. On account of the cold in hospital at night, I was lately under the necessity of treating a case of remittent fever, with congestion of the lungs, liver, and spleen, in one of the empty out-houses. Water for the use of the hospital was formerly obtained from a well which is situated within the compound of a house occupied by a family of Eurasian pensioners. The insanitary state of this place was the subject of a medical committee during the year, by whom the site was condemned; but further than placing the compound under stricter sanitary surveillance, and procuring the supply of water for the hospital from one of the regimental wells, no radical change has been effected.

Digitized by Google

XV. Sickness, mortality and invaliding.—Strength of the Regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	633·58
Absent	...	...	...	...	65·58
				TOTAL ...	699·16

STATION.	PERIOD.		Strength.	TOTAL NUMBER OF		Daily average number of sick.	PER CENT OF STRENGTH PER ANNUM.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Meerut ...	1st January ...	2nd March ...	664	88	6	16·31	79·2	5·38	2·45
Head-quarters at Camp, Delhi	3rd March ..	3rd April ...	475·95	32	...	4·29	76·4	...	0·90
Head-quarters at Meerut ...	4th April ...	31st December	561·92	373	6	12·52	89·1	1·5	2·22
Depôt at Meerut ...	3rd March ...	3rd April ...	215·5	6	...	9·36	31·9	...	4·34
Detachment at Umballa ...	1st November	31st December	263·12	51	...	2·0	116·1	...	·78
TOTAL ...			633·58	550	12	14·91	86·81	1·89	2·35

Number of deaths in hospital, 12; out of hospital, 2; total, 14; per cent. of total strength .. 2
" invalided ... ... 35; " " ... 5
" sent on sick leave ... 14; " " ... 2
" of days spent in hospital, 5,499; per admission, 10; per man of total strength ... 7·86
" " on sick leave, 1,779; per man, 127·07; " " ... 2·54

Total temporary loss of service per man of total strength ... 10·40

There is a very remarkable difference between the sickness of the year under review and that of 1874, there being a decrease from the former year of no less than 1,059 admissions. Surgeon-Major Perkins states in his sanitary report for 1874, that the "sickness in 1874 has been excessive, and the mortality far exceeded that of other years." He offers no opinion as to the cause of this unusual sickness in the regiment during 1874, but notes that the level of the subsoil water is very high in this station, and that the defective drainage and water-logged state of the soil were probably the chief causes of the general ill-health of the station.

XVI. Principal causes of sickness.—The principal causes of sickness have been, in the order of prevalence:—Paroxysmal fevers, 253; dysentery, 48; ulcer and boil, 42; blisters of the feet, 35; injuries, 33; affections of the respiratory system, 25, including 2 from phthisis pulmonalis; and splenic affections, 20. Principal causes of sickness.

An outbreak of phagedænic ulcers, which took place towards the end of the year, deserves some notice here. On my taking over temporary charge of the regiment in November, Deputy Surgeon-General C. Manners Smith drew my attention to the nature of these ulcers, six of which were under treatment at the time. Mr. Smith remarked that he had seen a similar outbreak at Agra in the 36th N. I., which outbreak is graphically described by Surgeon A. B. Strahan, in the *Indian Medical Gazette*, vol. II, for 1875. These ulcers were all of the same kind. Situated on the lower extremities, generally in front of the tibia, or over one or other of the malleoli, circular in outline, with hard smooth edges as if they had been chiselled out of the skin, the surface covered with a pale slough, which on removal disclosed pale flabby granulations showing little or no healing power. In every case they followed a slight abrasion of the skin, abscess, or small pimple. The men who were the subject of these ulcers had had fever in the preceding autumn, and had fallen into a weak anæmic state of health, all of them having spongy gums. Treatment in the open air having been considered desirable by Mr. Smith, they were treated in a tent, with evident benefit. All received iron, quinine, lime-juice, and as generous a diet as they could afford. One case was treated with large doses of *potass. iod.* and quinine, in addition to the lime juice, with good effect. Locally.—*Zinci chlorid.* in paste *potassa fusa*, a mixture of dry coffee and atta, and dry earth, were all used to remove the sloughs. I was induced to try the application of dry earth from the excellent effects which I saw by its use for huge sloughing sores among the convicts at Port Blair, Andamans, under the hand of Surgeon Major Dougall. The dry earth acted more quickly and pleasantly than any of the other applications. After removal of the slough, the ulcers were treated with lotions of sulphate of zinc, boracic acid, and carbolic acid. Skin engrafting was not attempted in any case. Outbreak of phagedænic ulcers. Treatment. Action of dry-earth.

XVII. Principal causes of mortality.—Fourteen deaths occurred during the year. Of these, 7 were caused by malarious fevers, 5 by affections of the lungs, 1 by general debility, and 1 by small-pox. All the fatal cases of remittent fever, of which there were 4, were complicated with congestion of the lungs or brain. Principal causes of mortality.

Digitized by Google

Epidemics. *XVIII. Epidemics.*—Meerut suffered from a sharp outbreak of cholera towards the end of the hot season and during the rains, affecting the European troops, the 4th Bengal Cavalry, and the native community generally throughout the station. The 5th Native Light Infantry, however, enjoyed a complete immunity from the disease, not a single case having occurred in the regiment.

Vaccination. *XIX. Vaccination.*—None were vaccinated during 1875; but from 20th January to 30th January 1876, vaccination is being actively carried on amongst the recruits and camp followers.

Recruiting. *XX. Recruiting.*—Eighty-three lads presented themselves for enlistment during the year, of whom 70 were entertained, and 13 rejected; 5 were rejected on account of physical disability and 8 from being otherwise inefficient. Average chest measurement of these recruits, 33·05 inches; average height, 5 feet 8 inches; average stated age on enlistment, 20 years.

Inspection. *Inspection.*—Inspected by the Deputy Surgeon-General of the Meerut Circle. No alteration had taken place in the lines since last inspection, but the huts were in good order and general cleanliness prevailed. During the rains there was a large collection of water to the east of the lines, which rendered the locality swampy and unhealthy. The trench system of latrine is now reported on as being thoroughly established in the regiment, and it was ascertained one day that out of a strength of 541 men no less than 525 men resorted to it.

Urinals. The urinals in use in this regiment are said to answer admirably, and are very simple in construction, *viz.*, "a small space enclosed by four walls is constructed in the rear of the lines, one serving for every two companies. In this enclosure an earthen vessel deposited in a naund is placed; all the urine is thus collected and the contents are removed daily; there is no offensive smell perceptible in these urinals, and they are used exclusively by the men."

Hospital. No alteration has been made in the hospital building, which has been described in previous reports. The "batten doors" which so often have been made a subject of complaint and remonstrance still exist, and a dead-house has not as yet been built. All the arrangements in hospital for the comfort and treatment of the sick were quite satisfactory.

Physique. Mr. Smith reports that a marked improvement has taken place in the physique of the sepoys since the introduction of a system of gymnastics into the regiment, and the exercise has become very popular amongst them.

Lock hospital. *Lock Hospital, Meerut.*—The following information has been taken from the inspection report written by the Deputy Surgeon-General of the Meerut Circle. No alteration has been made in the hospital during the year. The area of registration embraces the city and all villages in the circle of four miles from cantonment boundaries, and includes a population of some 130,000 people.

Statistics. On the 1st January, 89 prostitutes were borne on the register, and their average strength during the year was 84·5, which, for the area of registration, seems to be a very small number, and one which has been decreasing since 1871. During the year 46 women were treated for gonorrhœa and 27 for primary syphilis, and these figures are said to show a decrease in the amount of disease among the registered prostitutes. The cost of the establishment is Rs. 171 monthly, and it is entirely defrayed from the cantonment funds. The average strength of the European garrison at Meerut was 1,435·13, and from it there were 118 cases of venereal disease admitted, or at the rate of 8·29 per cent.; this is said to show a decrease of 1·05 per cent. of disease on the returns for 1874.

Cost of establishment.

Digitized by Google

18. The Alipore Regiment of Native Infantry—Agra.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Gorakhpur, Dec. 1868...	93·9	1·4	3·7
1871 ...	Ditto, ditto ...	176·5	2·4	6 2
1872 ...	Agra, Dec. 1872 ...	205·5	1·3	7·2
1873 ...	Ditto, ditto ...	161·8	2·	7·1
1874 ...	Ditto, ditto ...	145·2	1·2	4·7
	Average	156·58	1·66	5·78
1875 ...	Baxa, Nov. 1875 ...	124·79	1·98	4·59

Surgeon H. A. C. Gray, M.B., reports as follwos :—

Medical Officers.

I. Medical Officers.—Surgeon-Major J. A. C. Hutchinson, M.D., held medical charge of the regiment at head quarters (Agra) until March 1875, when he was relieved by Surgeon S. H. Browne. In October, Surgeon Browne was compelled to proceed to Europe on medical certificate, and was relieved by Surgeon H. A. C. Gray, M.B., who marched with the regiment to Baxa, Bhootan.

Surgeon French Mullen, M.D., was in medical charge of the detachment at Ulwar; Surgeon-Major H. Harrison of the detachment at Fatehgarh; and Surgeon James Cleghorn, M.D., of the escort with the Lieutenant-Governor, North-Western Provinces.

Location and movements.

II. Location and movements.—The head-quarters of the regiment was at Agra up to the end of October, when the regiment proceeded on the annual relief to Baxa, Bhootan. A detachment was sent to Ulwar on the 2nd March, and it returned to head-quarters on the 22nd October. The escort which went with the Lieutenant-Governor, North-Western Provinces, last year returned on the 9th March. The detachment which was at Futtehghur joined head-quarters on the 5th April.

Topography and physical geography.

III. Topography and Physical Geography.—Mr. Gray has submitted a carefully prepared description of the topography of Baxa, but it would take up too much space if printed. Reviewing the chemical composition of the rocks and soil, he remarks that the salts of lime are conspicuous by their absence, while those of magnesia greatly predominate. The water of a stream that flows to the south-east of the Fort is said to be notorious for producing goître, and, as the magnesian salts were in excess in it, Mr. Gray was led to theorize as to the cause of this affection, but he has not ventured any opinion regarding it.

Lines, barracks and huts.

V. Lines, barracks and huts.—The lines and barracks at Agra have been described before. Those at Baxa are in a bad condition. There are 12 buildings made of grass, split bamboos and mud. Each of these is of the following dimensions :—

Length, 85 feet.
Breadth, 19 feet.
Height of wall to eaves, 7 feet.
Height in the middle to ridge of roof, 14 feet.

Each has four doors, one at each end and two in the middle, opposite one another. In fine weather the ventilation is fair, for change of air can occur freely between walls and eaves through the doors and the crevices in the walls. But during the heavy rains and storms that are ahead, I can imagine the state of these miserable dwellings: damp roofs and damp walls (for mud is greedy of moisture), damp clothing hanging on the walls, a stagnant atmosphere saturated with watery vapour, carbonic dioxide and organic matter,—all will enter as potent factors in producing disease.

Drainage.

VI. Drainage.—Drainage is very good, as nature has done all that is required. Artificial drains are cut around the barracks to accumulate the water, give it a more regular direction, and discharge it through wooden spouts into the ravine to the south of the Fort.

Conservancy and latrines.

VII. Conservancy and latrines.—For the use of the men during the night, a grass and bamboo shed was erected 24 feet × 12 feet, and containing 12 compartments which were separated by low walls. The "dry earth" system was in use, and each compartment was provided with two tin receptacles, *viz.*, one for the solid excreta and dry earth, and the other one was tarred for the reception of urine. The latrine was cleaned out every morning, and the medical officer reports that "the arrangement answered splendidly." During the day the men resort to a piece of ground situated a good distance to the south-east of the Fort, and the nightso-il was removed from it and thrown into the ravine just beyond. A urinal was also constructed for the use of the sepoys.

Water-suppl.

VIII. Water-supply.—Water is obtained from springs; it is clear and sparkling, and very much liked by the men. The water of one stream to the south-east of the fort is noted for producing goitre. The men do not drink this water, but use it for bathing and cleansing purposes.

Digitized by Google

Diet.

IX. Diet.—The men are rationed by the Commissariat. The system is a good one; but the atta that comes from Calcutta is bad. The men say it makes very heavy bread. The unground wheat, too, is very weevil-eaten. If the atta improves, a better system could not be found. The men are well nourished. Vegetables are scarce, and this is a great drawback. The commanding officer is endeavouring to improve the regimental garden in order to supply the men with as much vegetables as possible.

Clothing.

X. Clothing.—The men were clad well, I believe, at Agra. On the march they wore their winter uniforms, and were therefore warmly clothed during the coldest hours of the morning. At evening, however, they prefer Hindustani clothes, and I had reason to complain of their insufficiency. Bronchial catarrhs were common, and pneumonia gave three admissions. On arrival at Baxa the officiating commanding officer paraded the men in Hindustani dress, and took down the names of those men found insufficiently clad in order to compel them to have warm clothing made up. And now regarding the much disputed question—the proper kind of foot-covering to be worn by the sepoy. Each man has his own idea on the subject, and I do not pretend to decide the point. Hear the voice of experience at the termination of a march from Caragola to Baxa: The regiment, about 666 strong, marched for 24 days and traversed 223 miles. During this period there was *only one admission from blister of feet*, and this was caused by boots. Almost all the men wore Hindustani shoes, excepting some Goorkhas who wore boots, and socks knitted by their women. The annual return shews 20 admissions from blisters of feet, and all of these were caused by boots. Ask the men what foot-covering they like best, and they will tell you they prefer their shoes.

Duty and employment.

XI. Duty and employment.—At Agra the duty was not excessive. During the hot season the regiment supplied all the guards for the Agra Fort. On the march the men had very little military duty proper, but they were very hard worked as a necessity in consequence of the exceedingly bad roads and numerous rivers to cross. Parties had to be told off frequently to help the carts, many of which had to proceed to the next camp during the night.

Marches and service.

XII. Marches and service.—The regiment left Agra on the 25th October and proceeded by train to Sahibgunge, making two day-halts of about 9 hours each, one at Allahabad, and the other at Dinapore. At Sahibgunge, the regiment had to encamp on most filthy ground; the drinking water was bad, obtained from a well near this ground. On the morning of the 29th October, the regiment crossed the Caragola river in the steamboat. The men were without food and drink for 8 or 9 hours. The sick especially suffered.

On an average the men marched 9 or 10 miles per diem. As far as Titalyah the roads were very dusty, rendering the marches fatiguing. After passing Titalyah, the men found marching pleasant and reached the new camp rather fresh. Marching began between 4 and 5 A.M., according to the number of miles to be got over. The camp was generally occupied between 8 and 9 A.M. A mile was marched over in 17½ minutes. In short marches the men were halted once, and in long ones, twice. In the march from Alipore to Sautraboree, a distance of 19 miles, there were three halts of an average 25 minutes each.

Most of the encamping grounds were damp, especially the one at Gyasul. It had the appearance of a dried-up marsh, about 2 feet below the level of the general surface of the country. The grass on it was very long and had to be cut down. Every one noticed a peculiar, heavy smell about the place. It is the opinion of the officiating commanding officer, who has had some experience of this part of India, that the regiment marched a month too early. The soil, rendered damp by recent rains, had not time to dry; during the night, too, the dew fell heavily, drenching the tents and wetting the grass and ground. From warm beds the men rose at the small hours of the morning; their shoes and feet soon became wet. The days were generally hot, temperature 87° Fah: but in the evening the temperature fell suddenly. As the regiment approached the head-quarters of malaria,—the Terai—the number of sick began to increase rapidly. Leaving Agra with only 9 sick, at Titalyah there were 39; at Kooch Behar 55; at Alipore 57; and at Baxa 81. On the 11th December, there were 101 in hospital, the result, no doubt, of marching through the deadly Terai. Fatigue, damp, and malaria working together, produced this large amount of sickness.

Hospital.

XIV. Hospital.—A description of the erection used as a hospital was given in the report for 1872; it is constructed of bamboos plastered with mud and white washed; the jhamp doors have been replaced by glass ones, and there is a verandah to the south. The medical officer states that it was fairly comfortable and was sufficiently ventilated.

Hospital latrine.

Hospital latrine.—The latrine for the use of the patients in hospital was, on first arrival of the regiment at Baxa, considered to have been excessively faulty in all its sanitary arrangements, but certain alterations have been made, which it is hoped will prevent the floor from becoming saturated with urine.

Sickness, mortality and invaliding.

Sickness, mortality and invaliding.—Strength of the regiment—

Present	621·80
Absent	82·4
TOTAL ...	704·2

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Agra and Bara	1st Jan. 1875	31st Dec. 1875	509·61	663	10	25·59	130·10	1·96	5·02
Detachment at Fatehgarh ...	„ „	5th Apl. 1875	160·50	44	...	7·41	105·31	...	4·61
Ditto Ulwar ...	2nd Mar. 1875	22nd Oct. 1875	56·00	13	...	·66	36·04	...	1·17
Escort with Lieutenant-Governor, North-Western Provinces	1st Jan. 1875	9th Mar. 1875	163·25	56	...	6·82	184·11	...	4·17
Total ...	...	...	621·8	776	10	28·6	124·79	1·61	4·59

Number of deaths in hospital, 10; out of hospital, 4; total,	14;	per cent. of total strength	...	1·98
„ invalided	25;	„ „	...	3·54
„ sent on sick leave	13;	„ „	...	1·84
„ of days spent in hospital, 10,306;	per admission, 13·28;	per man of total strength	...	14·60
„ „ on sick leave, 1,394;	per man, 107·23;	„ „	...	1·97
Total temporary loss of service per man of total strength			...	16·57

XVI. Principal causes of sickness.—Malarious fevers, bowel complaints, and measles were the principal causes of sickness, and the two former diseases supplied a large number of admissions on the line of march. Principal causes of sickness.

XVII. Principal causes of mortality.—Lung diseases, pneumonia, bronchitis and acute miliary tuberculosis were the principal causes of death. Enteric fever caused one death, as did also a perforating ulcer of the duodenum. Principal causes of mortality.

XVIII. Epidemics.—The epidemic of measles gave 16 admissions, one of which proved fatal. It began at Agra in the end of March and lasted until the middle of May. I am unable to say anything more about the epidemic, as I was not in charge of the regiment when it occurred. Epidemics.

Remarks by Major W. Winson, commanding the regiment.—After perusal of this report, I called for a return of the proportion of boots and Hindustani shoes worn by the men on the march, and found of the effective total two hundred and twenty-five men marched in the former and four hundred and thirty-four in the latter. In one company alone fifty-two used boots and thirty-three Hindustani shoes. The question suggested is, were the boots properly fitted, would a large percentage of blistered feet occur? Remarks by the Commanding Officer.

2. The men referred to as being employed marching and working with the carts at night, seem on inquiry to be principally married men, and occasionally a squad of recruits was sent on with the mens' cooking utensils and kits not in use.

36th (The Bareilly) Regiment Native Infantry—Agra.

I. Medical Officers.—Surgeon A. B. Strahan, who has been in charge of the regiment throughout the year, submitted the annual report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Peshawar, Nov. 1869 ...	284·2	2·6	7·1
1871 ...	Ditto, ditto ...	142·4	1·5	4·2
1872 ...	Ditto, ditto ...	177·1	3·3	4·1
1873 ...	Agra, March 1873 ...	92·7	2·7	5·4
1874 ...	Ditto, ditto ...	112	2·6	6
	Average	161·52	2·54	5·36
1875 ...	Agra	48·40	1·30	3·38

II. Location and movements.— Location and movements.
(*a.*) Head-quarters at Agra, from 1st January to 31st December 1875.

(*b.*) Detachment at Fatehgarh, from 19th March to 31st December 1875.

(*c.*) Detachment at Ulwar, from 1st January to 18th March 1875, and from 9th October to 31st December 1875.

Digitized by Google

Topography, &c.

IV. Topography, &c.—Around the station the ground is broken and uneven, being intersected by ravines and nullahs. The soil contains a large amount of the salts of potash and sodium. The cantonments are situated about 2 miles from the city. Near cantonments is a large open maidan, admirably adapted for parade purposes.

Lines.

V. Lines.—The lines are situated to the south-east of cantonments, and adjoin the parade ground. The huts consist of eight blocks; each block is capable of accommodating about 80 men. They are ventilated by means of doorways on either side, as well as at the ends; roof ventilation has also been introduced. To increase the superficial area and cubic space, each block has lately been lengthened by about 16 feet. The drainage of the lines is excellent; there is a natural slope in the ground, and channels have been dug towards a large nullah which runs at right angles to the lines; by this means the lines are perfectly dry in the rainy season, and there is no accumulation of surface water.

Drainage.

VI. Drainage.—In the station, generally, the natural drainage is not good, owing to the level nature of the ground. Much has been done, however, to improve it as much as possible. As mentioned in the preceding paragraph, the drainage in the lines is excellent.

Conservancy and latrines.

VII. Conservancy and latrines.—The latrines are situated about 140 yards to the south-east of the lines; the trench system is adopted, with moveable screens. These when made use of are filled in by the company mehters and fresh ones dug. The system is excellent, and no noxious effluvium is perceptible near them. As yet subsequent cultivation has not been tried. The hospital latrine is a pucka building about 40 yards distant from the hospital.

Water-supply.

VIII. Water-supply.—Water is obtained from pucka wells in the vicinity of the lines; the supply is ample, but the water is brackish.

Diet.

IX. Diet.—The regiment being composed almost entirely of Hindús, the chief articles of food are rice, attah, dhall, vegetables and milk, with ghee and spices. Vegetables have been readily obtained at low prices. All articles of food are daily inspected by the quarter-master, and a committee of Native officers visit the bazar every day to inspect the supplies. As a rule, the men do not under-feed themselves.

Clothing.

X. Clothing.—In winter the regulation scarlet tunic with serge pyjamahs and gaiters are worn; a quilted vest is worn underneath the tunic, and a great coat over all for night duty. In summer, white drill clothing is worn; a half-boot with strap and buckle across the instep is worn. This seems to answer well.

Duty and employment.

XI. Duty and employment.—As the regiment had to send detachments to Fatehgarh and Ulwar for the greater part of the year, the usual station guards, orderlies and escort parties, &c., had to be furnished from those at head-quarters; the duty was consequently sometimes heavy, but no bad result followed from this.

Exercise amusement and occupations.

XII. Exercise, amusements and occupations.—There is a gymnasium with appliances in the lines. In the morning after parade the recruits have to practise gymnastics for an hour under a havildar. This is excellent exercise and tends materially to increase their muscular development.

Marches and service.

XIII. Marches and service.—The head-quarters of the regiment has remained at Agra during the year, and has supplied detachments to Fatehgarh and Ulwar.

Hospital.

XIV. Hospital.—The hospital has been frequently described in former reports. It is a long kutcha-built building with thatched roof. It is capable of accommodating 34 men. As yet no steps have been taken to erect the new hospital which was sanctioned some time ago.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	617·73
Absent	70·84
TOTAL	688·57

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of strength per Annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Agra ...	1st Jan. 1875	31st Dec. 1875	473·58	152	7	16·53	32·09	1·47	3·49
Detachment at Fatehgarh ...	19th Mar. 1875	...	152·39	134	1	4·87	111·40	·83	3·86
„ Ulwar ...	1st Jan. 1875	16th Mar. 1875	56·	9	...	2·87	78·26	...	4·23
„ „ ...	9th Oct. 1875	31st Dec. 1875	51·	4	...	·08	35·27	...	·15
TOTAL ...			617·73	299	8	20·91	48·40	1·29	3·38

Number of deaths in hospital, 8; out of hospital, 1; total, 9; per cent. of total strength			... 1·30
„ invalided	38;	„ „	... 4·79
„ sent on sick leave	16;	„ „	... 2·32
„ of days spent in hospital, 7,542; per admission, 25·2; per man of total strength			... 10·95
„ „ on sick leave, 2063; per man, 128·93;		„ „	... 2·99
Total temporary loss of service per man of total strength			... 13·94

Digitized by Google

XVI. Principal causes of sickness.—Class I, general diseases, subdivision A. There were during the year 60 admissions for fever, namely, 6 for remittent fever, 53 for ague, and 1 for febricula. Sub-division B. yields 36 admissions, of which 16 were for primary syphilis, 6 for secondary syphilis, 4 for chronic rheumatism, 8 for acute rheumatism, and 2 for muscular rheumatism. Diseases of the nervous system yield 3 admissions, namely, for paralysis, paraplegia and mania. Of the respiratory system, 9 were admitted for bronchitis, 4 for pneumonia, and 3 for asthma. Diseases of the digestive system yield 30 admissions for dysentery and 7 for diarrhœa. Of the urinary, there were 14 admissions for gonorrhœa. The venereal diseases were chiefly confined to the men on detachment duty at Fatehgarh and Ulwar. Of the cutaneous, there were 20 admissions for boils and 15 for ulcers. Of the accidental injuries, there were 12 admissions for contusions and 20 for blisters of the feet. Principal causes of sickness.

XVII. Principal causes of mortality.—This year the mortality has been considerably less than it has been for some years past. In all, there were 9 deaths, of which 7 occurred in the regimental hospital; one in the detachment hospital at Fatehgarh; and one man died on furlough. Last year there were in all 19 deaths. Of the deaths, 2 were due to pneumonia; 3 to remittent fever; 1 to paralysis; 1 to febricula; 1 to opium poisoning; and one is not known, as the man died at his home while on furlough. Principal causes of mortality.

XVIII. Epidemics.—No epidemics have occurred during the year. Although cholera was prevalent both in the station and in stations around it, no case occurred in the regiment; only 3 cases of measles occurred. Epidemics.

XIX. Vaccination.—All those recruits who had not been already vaccinated, or who were not protected by a previous attack, were vaccinated in the cold weather; 37 were vaccinated, and, with the exception of one, all were successful. Vaccination was performed twice in this case, but without success. In addition to the recruits, all the children in the lines were vaccinated. Vaccination.

XX. Recommendations.—During the rainy reason it was recommended that small prophylactic doses of quinine should be given to those men who were subject to attacks of fever. The men themselves seemed to appreciate this, and used to come to hospital of their own accord to receive their dose. It was attended with good results, as the number of fever cases were greatly diminished. Recommendations.

XXI. Special remarks.—The regiment has been so remarkably healthy during the year, that I have little to offer in the way of special remarks. In last year's report I stated my belief that the cases of boils and ulcers would be materially diminished this year, and this has turned out to be the case, due in my opinion to two reasons, namely, that the old enfeebled Peshawar fever subjects have been weeded out, and their places filled by fine, young, healthy recruits, and also that a four years' residence in Agra has done much to eradicate the effects of the climate of Peshawar on those who formerly suffered much from fever; and consequently, as the system has regained tone, those cases which were so prevalent in 1873 are now almost *nil*. Special remarks.

Inspection.—Inspected by Dr. Thorpe on the 21st March 1876. He reports that the health of the men of this regiment has been much better than during the two previous years. Ulcers, which were such a trouble last year, had almost disappeared, and the men have a more healthy appearance. No special remarks are made regarding the lines, conservancy, water-supply, &c., as those in the report for 1874 will be applicable for 1875. The details in hospital for the treatment of the sick were quite satisfactory as regards condition and quantity. Inspection.

33rd (The Allahabad) Regiment Native Infantry—Delhi.

I. Medical Officers.—The annual sanitary report of this regiment has been written by Surgeon E. R. Johnson, who was in charge of the regiment throughout the year, with the exception of from the 11th to 31st December, when temporarily attached to the general hospital for native troops at the Delhi Camp of Exercise. Surgeon F. C. Ghose, temporarily attached to the regiment from 11th to 31st December, officiated in medical charge of head-quarters at the Camp of Exercise and regimental depôt at Delhi. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Mozar, March 1867 ...	330·2	2·1	7·7
1871 ...	Allahabad, Nov. 1870...	120	1·9	4·6
1872 ...	Ditto, ditto ...	162·3	1·5	4
1873 ...	Ditto, ditto ...	119·3	1·7	5·6
1874 ...	Ditto, ditto ...	103·1	·5	3·5
	Average	167·80	1·54	5·08
1875 ...	Delhi, 1st January 1875	142·97	·71	4·22

Digitized by Google

Location and movements.

II. Location and movements.—The regiment arrived at Delhi on 1st January 1875, and occupied the Native Infantry lines vacated by the 20th Regiment, Punjab Native Infantry. The regiment left for the Delhi Camp of Exercise on the 6th December, and joined the 1st Division, 1st Brigade, encamped on the northern side of the Alleepoor road, between it and the river Jumna. The regiment remained here till the end of the year. A detachment with an average strength of 190·12 continued to occupy the regimental lines during this period.

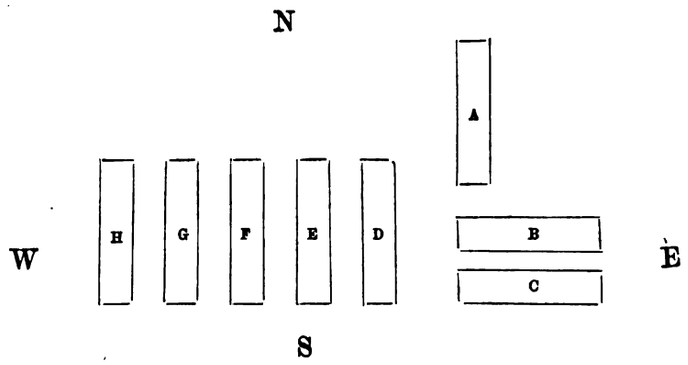
Meteorology and climate.

IV. Meteorology and climate.—The meteorology of the year has been remarkable for a long continued hot weather; scarcely any rain falling till the latter end of July, and both this month and August being unusually dry. In the second week of September, about 29 inches of rain fell in three days, much damage being done throughout the district. The cold weather began early, and scarcely any rain fell from the end of September to the close of the year.

Lines, barracks or huts.

V. Lines, barracks or huts.—The lines are situated within the city walls at the south-east corner and near the Delhi Gate. The Faizbazar runs to their west side, and on the other sides there is a fair amount of open space. They have trees planted irregularly about them, but they are not too numerous. The drainage is into a large pucca drain which runs to the west side, and, passing through the city walls, finally empties itself into the Jumna. The barracks are eight in number,—one for each company. They are irregularly placed thus—

They vary rather in size, A, B and C companies' barracks being smaller than the others. They are flat-roofed pucca buildings. The smaller ones have 12 doors with perforated spaces, 4 feet × 4 feet over ten of the doors, and 17 pillars placed down the centre supporting the roof; the larger ones have 22 doors with 20 similar perforated spaces and 21 pillars. There are no verandahs.



The measurement of a small barrack is 140 × 28 × 12½ feet; from this must be deducted 17 pillars 3 × 2 × 12½ feet. Superficial space 2,818 feet per barrack; cubic space 35,225 feet per barrack.

The average present strength of a company since the regiment has been stationed at Delhi has been 79·09. Of these, the average number who slept in each barrack, after deducting men in hospital, guards, native officers, &c., was 53·17; so that the superficial space per man would be 53 square feet, and the cubic space 662 cubic feet. The larger barracks occupied by D, E, F, G and H companies measure 218 × 22½ × 11½; from this must be deducted 21 pillars 3 × 2 × 12½ feet—

Superficial space per barrack	4,779	
Cubic space per barrack	54,958	
Superficial space per man....		89 square feet.
Cubic space per man		1,033 cubic feet.

The barracks, with the exception of those occupied by B and C companies, face to the east and west, *i. e.*, in the direction of the prevalent winds, and are sufficiently ventilated by the perforated spaces above the doors. It was thought that the two barracks which faced north and south were not equally good, and a recommendation was made that more perforated openings should be made at their east ends. This recommendation having been carried out, there is now nothing to be desired with respect to the ventilation. In the rear of the barracks are cooking sheds, 4 tiled buildings well ventilated, and 150 feet long. Each of these accommodate 2 companies.

Drainage.

VI. Drainage.—Drainage of the station and lines is naturally good, being situated on the highest bank of the river Jumna. The lines are drained by a large pucca drain which runs to the west side.

Conservancy and latrines.

VII. Conservancy and latrines.—The station is generally clean, and the conservancy arrangements good. The trench system has not been introduced, there being no available space sufficiently near the regiment. A large pucca latrine situated near the south-west corner of the lines is used. The dry-earth system is that adopted, and small walled enclosures, with sloping floors, have been built during the year at either end of the latrines. These drain into the main drain of the lines, and are used for ablutionary purposes. Men are prohibited from using water in the latrines themselves. The accommodation is sufficient. Sewage is carried beyond the city walls, buried in trenches, and the land used for cultivation of melons and other crops.

Water-supply.

VIII. Water-supply.—Water-supply is from wells and from a branch of the Jumna Canal. A large tank filled with canal water is situated in the middle of the lines. The water-supply has been good. The wells being flooded with canal water, contain water of good quality.

Digitized by Google

Before this was done, the water was said to have been brackish and bitter-tasted. Men bathe on the ground outside the wells and tank; but a large number go down to the river Jumna for this purpose. Here, too, the washing of clothes is mostly carried out.

IX. Diet.—There are no orders as to the amount of food a man is to buy from the regimental bunneas, but the bunneas are ordered to supply an amount equal in value to half a sepoy's pay, and practically every man does purchase this amount. The bazar supplies have been good and food cheap. There is a committee of Native officers, who are changed monthly, who are responsible for the supplies being good, and to whom all complaints are in the first instance made. The men are generally well fed and have certainly improved in that respect since the regiment left Allahabad. Diet.

X. Clothing.—The only change in the clothing of the regiment has been the introduction of cloth gaiters of the same colour as the trousers. They are worn with short pantaloons fastened below the knee instead of the long trousers formerly worn. This gaiter fits inside the boot and protects the ankle from being galled by the upper edge of the boot. It is both neater in appearance, and better adapted for marching in than the loose trousers formerly worn. The ammunition boot continues to be worn, but from the cause above stated, blistered feet have become much less common; there being 37 admissions from this cause against 63 in the previous year. Clothing.

XI. Duty and employment.—The duties at Delhi have been light, and consist of the ordinary drills and parades. The station guards are few in number—Nights in bed 8·09. Duty and employment.

The duties at the Camp of Exercise were rather severe, but did not act at all prejudicially, the regiment being unusually healthy at that time. This may partly be due to the fact that the night duty at the camp was rather small.

XII. Exercise, amusements and occupations.—Since the regiment has been stationed at Delhi many of the men have taken to shooting, and a number of men possess guns. The Rajpoots and Mahomedans are fond of athletic sports, wrestling, &c. There is no available space for gardening. Exercise, amusements and occupations.

XIII. Marches and service.—The regiment was stationed at Delhi till the 7th December, when it marched to the Camp of Exercise and joined the 1st Division, 1st Brigade, and encamped on the north of the Alleepoor road, between it and the river Jumna. The regiment remained there during the whole period of the Camp of Exercise. The camping ground was dusty and devoid of shade, but otherwise good. The amount of night duty was small, and the men more healthy than they had been in cantonments. Marches and service.

XIV. Hospital.—The regimental hospital is situated near the lines, between them and the river Jumna, but inside the city walls. It is a long tiled building with a good verandah all round. The four corners of the verandah are converted into small rooms used as dispensary, store-room, bath-room, and dead-house. It is ventilated by ridge ventilation and also by 20 round openings, a foot each in diameter and 10 feet from the floor. It has a superficial surface of 2,928 square feet, and could contain 58 patients, calculated at 50 superficial feet for each There is no special ward for infectious cases. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	631·56
Absent	70·93
TOTAL	702·49

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quaters at Delhi ...	1st Jan. ...	7th Dec. ...	627·07	835	3	27·03	142·95	0·51	4·31
Ditto at Camp of Exercise.	8th Dec. ...	31st Dec. ...	499·81	44	0	7·92	128·51	...	1·58
Detachment at Delhi ...	Ditto	Ditto	190·12	24	1	13·72	184·33	7·68	7·21
TOTAL ...	...	...	631·56	903	4	26·70	142·97	0·63	4·22

Number of deaths in hospital, 4; out of hospital, 1; total,	5;	per cent. of total strength ...	0·71
„ invalided	29;	„ „ ...	4·12
„ sent on sick leave	18;	„ „ ...	2·56
„ of days spent in hospital, 9,782;	per admission, 10·82;	per man of total strength ...	13·92
„ „ on sick leave, 2,531;	per man, 140·61;	„ „ ...	3·60
Total temporary loss of service per man of total strength ...			17·52

Digitized by Google

Principal causes of sickness.

XVI. Principal causes of sickness.—The principal causes of sickness have been: ague, 569 admissions, against 301 in the previous year; mumps, 31 admissions; chronic rheumatism, 57, against 28 in the previous year; conjunctivitis, 9 admissions; affections of the lungs and bronchiæ, 16, against 12 in the previous year; dysentery, 46 admissions, against 27 in 1874. This disease, though more frequent, has not been of a severe type. Gonorrhœa and primary syphilis have only given 6 admissions. Affections of the skin, including ulcers and boils, 28 admissions, against 35 in 1874. Boils were much more common in the comparatively moist climate of Allahabad. Blister of the foot, 37 admissions, against 63 in 1874,—*vide* para. *X.* Total admissions 903, against 635 in 1874. In almost all classes of disease, with the exception of skin disease and blistered feet, 1875 compares unfavourably with 1874.

Principal causes of mortality.

XVII. Principal causes of mortality.—There have been 5 deaths, of which 4 occurred in the regimental hospital, *viz.*, ague 1, cholera 1, general dropsy 1, and pneumonia 1. The death out of hospital took place in the regimental hospital 34th Native Infantry, from phthisis pulmonalis.

Epidemics.

XVIII. Epidemics.—The only epidemic has been one of mumps. The first case occurred in July, and no other case appeared till September 1875; after which, cases continued to be admitted till the end of the year. The total number of cases was 31. They were not confined to any particular caste or class of men; but cases were most frequent among the recruits and younger sepoys. The epidemic was not affected by the move of the regiment into camp, where men continued to be admitted, though all cases occurring in camp were immediately transferred to the depôt hospital. There was one case of cholera. The patient was living away from the barracks when attacked. No cases occurred in the barracks or regimental lines.

Vaccination.

XIX. Vaccination.—Of 119 men vaccinated during the year, rather more than half resulted in a perfect or modified pustule. The regiment is believed to be efficiently protected from small-pox.

Recommendations.

XX. Recommendations.—Recommendations have been made with regard to alterations and improvements in the regimental latrines, *viz.*, the substitution of dry-earth for river sand, and that separate enclosed spaces should be made for the purpose of ablution at either end of the latrines; and that the ventilation of B and C companies barracks should be improved as, detailed in paragraph V of this report.

Inspection.

Inspection.—Deputy Surgeon-General J. N. Tresidder inspected the hospital and lines of this regiment on the 22nd February 1876. He reports that the ventilation of the barracks had been much improved, and may now be considered sufficient. The water-supply was derived from wells, and from a branch of the canal which came through the lines and filled a large pucca tank; towards the latter end of the year, the duct got out of repair, and the supply of canal water ceased, with the result that the well water deteriorated and appeared daily to be getting worse.

Owing to want of space, the "trench system" of latrine had not been introduced, but the regimental latrines had been much improved since Mr. Tresidder's previous inspection; the accommodation afforded by these latrines was sufficient, but still some of the men prefer to go to a considerable distance outside the city wall for necessary purposes. The hospital equipment was found to be complete.

Delhi boil.

The "Delhi boil" had made its appearance in the regiment, and Mr. Tresidder considers that it was caused by the use of well water, as, since the supply of canal water ceased, the regimental and dispensary returns showed a marked increase in the number of persons who came under treatment suffering from these boils.

Delhi Lock Hospital.

Delhi Lock Hospital.—Inspected by Mr. Tresidder on the 27th February 1876. He describes the hospital building as being well suited to the purpose for which it is required, and is well supplied with medicines, furniture, &c.

Charge.

Surgeon E. N. Johnson, 33rd Regiment Bengal Infantry, was in medical charge, and the Deputy Surgeon-General reports that he conducted the duties satisfactorily. On the day of inspection, there were 197 prostitutes on the register, of whom 13 were in hospital; there had been, it is stated, a marked diminution in the numbers of admissions from venereal diseases amongst the European soldiers in garrison since the month of May 1875.

Digitized by Google

Viceroy's Body-Guard—Dehra Dun.

I. Medical Officers.—Surgeon-Major O. Barnett, Surgeon to the Viceroy, was in charge from the 1st January until 29th March, and from 2nd November to 31st December. From the 10th April until 17th October, when the regiment was at Dehra, Surgeon Maclaren was in medical charge. The former officer furnishes the Annual Sanitary Report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Ballygunge, Nov. 1869.	233·9	·87	5·6
1871 ...	Ditto ditto ...	197·5	·11	6·7
1872 ...	Ditto ditto ...	276·7	...	5·98
1873 ...	Ditto ditto ...	201·8	1·16	3·86
1874 ...	Ditto ditto ...	151·2	1·15	3·3
	Average	212·22	·65	4·96
1875 ...	Dehra Dún, March 1875.	272·7	1·94	5·2

II. Location.—The regiment was stationed at Ballygunge, Calcutta, from 1st January till 7th March, when it left by rail for special duty at Delhi with the Viceroy's camp; remained at Delhi until 29th March, when it left for Dehra Dún to be stationed there during the hot months; left Dehra on the 18th October, and arrived in Calcutta on the 25th October. A detachment of 65 men was sent to Bombay for duty with the Viceroy on the occasion of His Royal Highness the Prince of Wales' reception. Rejoined head-quarters in Calcutta on 16th November. Location.

V. Lines and barracks.—There are four blocks of buildings which were built for stables; as there are no huts for the men like other native regiments, one block of stabling has been converted into a barrack-room and affords good accommodation for the men. The dimensions of this building, which is divided in four compartments, are as follows:— Lines and barracks.

	Feet.	Inches.
Length of each compartment	144	9
Breadth	14	0
Height...	14	3
Superficial area of each compartment	2,026½	0
Cubic area of ditto	28,877½	0
Superficial area of the 4 compartments	8,106	0
Cubic area of ditto	115,510½	0

This building would be rendered still more suitable for occupation if a verandah were added on it as has been done to the stables. At Dehra new lines have been built for the regiment, which are reported to afford ample and good accommodation.

VI. Drainage.—In the immediate vicinity of stables and lines there are surface drains which carry off refuse water and urine from the stables and lines; but as the ground is low and flat, it cannot but be imperfect; they are, however, kept as clean as possible under regimental supervision. Drainage.

VII. Conservancy and latrines.—There is a regulated establishment of sweepers, and the lines are kept clean and in good order under the supervision of regimental officers. The latrines are in good repair and conveniently situated; all refuse is taken away in a conservancy cart, and no refuse is allowed to accumulate in or near lines. At Dehra there are no latrines; in the monthly sanitary report the medical officer states the men resort to the open fields to leeward of the lines. Conservancy and latrines.

VIII. Water.—The water-supply, as I have repeatedly noticed, is not satisfactory, and I would again urge the necessity of securing to the men a supply of good water from the municipal stand-pipes. A good water-cart with a pair of bullocks would, I think, meet the requirements of the case and not entail much expense. The Hindús persist in taking water for drinking and cooking purposes from a tank. It is as clean as it possibly could be expected from its vicinity to the lines and stables. A water-barrel, as suggested, was applied for months ago by the commanding officer, but it has not yet been provided. The water-supply at Dehra is taken from an open canal; quality reported to be impure and liable to contamination. Water.

IX. Diet.—The men provide their own food and cook it; they ought to be well nourished, as their pay is liberal. I fear, however, many of them live poorly and save their money. I have spoken to the Commanding Officer on this subject, and he has given special orders that men who do not use sufficient and good food be brought to his notice. Diet.

XII. Exercise and amusement.—During the last four months, the men have been so occupied with their duties, which were unusually heavy, particularly during the Prince's visit, that they had not much time for amusement. Many of them play polo. Exercise and amusement.

XIII. Marches and service.—The marches and detachment duties performed have been fully detailed in paragraph *II.* Marches and service.

XIV. Hospital.—A stone building of the following dimensions:— Hospital.

	Feet.
Length	94
Breadth	20
Height	15

Digitized by Google

Superficial area 1,880; cubic area 28,200; situated on south side of lines, affording accommodation for about 18 men. The situation is low and damp, but is very convenient.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	80·3
Absent	...	22·6
TOTAL.	...	102·9

Station.	Period		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions	Deaths.	Daily average sick.
Head-quarters at Ballygunge	1st January and 25th October	7th March 31st Dec.	80·3	219	...	4·17	272·7	...	5·2
Ditto at Dehra Dún	10th April	17th October							

Number of deaths in hospital 0; out of hospital 2; total deaths, 2; per cent. of total strength ... 1·94
" of days spent in hospital 1,543; per admission, 7·04; per man of total strength ... 14·97

Total temporary loss of service per man of total strength ... 14·97

Principal causes of sickness.

XVI. Principal causes of sickness.—Intermittent fever is the disease from which the men of the regiment suffered most during the past year, and more particularly during the few months they have been in Calcutta. The disease was not of a severe type, but constantly recurring; the recruits of the regiment were so enfeebled as to be quite unfit for any continuous hard work. On referring to the monthly sanitary report, I find the regiment was remarkably healthy at Dehra during last hot season.

XVII. Principal causes of mortality.—Two deaths out of hospital of men on furlough; cause of death not known.

Special observations and remarks.

XXI. Special observations and remarks.—The health of the regiment does not compare favourably with previous years. Fevers and bowel complaints have been most prevalent. The augmented strength will in some measure account for the greater number of admissions.

Inspection.

Inspection.—The Deputy Surgeon-General of the Presidency Circle made his sanitary and medical inspection of this corps on the 13th January 1876. He reports that the barrack is in good repair, well ventilated, and not over-crowded, and he considers that it would add to the comfort of the men if a verandah was put up to the west side of it. The men up to date of inspection had to obtain their water-supply from tanks in the neighbourhood, and, even though this water is said to be of good quality, it cannot be doubted that a supply of the Calcutta Municipal water is, on sanitary grounds, a very necessary want in these lines. The surface drainage is described as being good. All the arrangements in hospital for the comfort and proper treatment of the sick were satisfactory. Mr. Cockburn inspected all the troopers who were off duty, as well as the recruits; the former he describes as being a fine, healthy-looking body of men and the latter as being of good physique, and likely to turn out efficient soldiers.

2nd Goorkha The Sirmoor Rifle Regiment—Dehra Dun.

Medical Officers.

I. Medical Officers.—Surgeon-Major F. F. Allen, C.B., held medical charge from 1st January to 3rd December 1875, when, on arrival at the Delhi Camp of Exercise, he made over temporary charge to Surgeon W. E. Griffith and became administrative medical officer of the 2nd Division of the Delhi Camp of Exercise, and was so employed on 31st December 1875.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dehra Dún, Jan. 1869.	74·1	1·8	3·7
1871 ...	Ditto ditto ...	108·8	2·1	4·4
1872 ...	Ditto ditto ...	140·9	4·3	5·3
1873 ...	Ditto ditto ...	86·4	2·2	3·9
1874 ...	Ditto ditto ...	80·9	2·5	3·9
	Average ...	98·22	2·58	4·24
1875 ...	Dehra Dún	75·28	3·36	2·96

Surgeon W. E. Griffith joined the regiment at Delhi on December 3rd, and held temporary charge

Digitized by Google

from that date to 31st December 1875. Surgeon-Major F. F. Allen, C.B. has prepared the annual sanitary report.

II. Location and movements.—The regiment remained at Dehra from 1st January to 18th November 1875, on which date the head-quarters, consisting of 537 of all ranks, marched for the Camp of Exercise at Delhi. One hundred and forty were left with the depôt at Dehra. Location and movements.

V. Lines, barracks, &c.—During the year 20 new barracks have been completed for the married men. The barracks are on the same plan as those described in previous reports; each gives accommodation to six families, giving two rooms to each. The huts in which these families formerly resided were pulled down when vacated, and the ground cleared and levelled. The ventilation of these barracks, height of plinth, and general accommodation is all that can be desired. There is no overcrowding in either the married or unmarried barracks. The latter require repairs to the thatch, and this will be attended to before the rains of the year 1876 commence. They have been frequently described in former reports. Lines, barracks, &c.

VI. Drainage.—The drainage of the cantonment and lines is naturally good from the slope of the ground. Several masonry drains about the lines and bridges have been constructed during the year, and this will steadily go on as funds are available until everything is complete. Several good new roads have been laid out; trees planted along them; drains cleaned; heads of ravines scarped, to prevent the rush of water in the rains from cutting them away. The course of the main water-channel through the lines has been marked out; this will, I understand, be made by the Canal department. Drainage.

VII. Conservancy.—I have nothing new to add on this subject. The trench system is in use as previously stated, and dry-earth and disinfectants used in the hospital privy. Disinfectants are used here, as the privy is very near the cook-house. Conservancy.

VIII. Water-supply.—The masonry channel (already described in other reports), conveying the drinking water, works well. The water is pure, clean and cool, and used by the men for all drinking and cooking purposes. No bathing or washing is permitted near the fountain. Water-supply.

IX. Diet.—The men, as a rule, live well; some few men with large families to provide for are perhaps occasionally somewhat straitened. The Goorkha is very kind-hearted and affectionate, and many support old parents, widowed sisters and relations. Fish and game accordingly become of importance to them. A number of guns have been procured, and the men can indulge in "*shikar*" when off duty, and thus add many little comforts to their ordinary diet. They cultivate gardens, and obtain from them onions, radishes, &c., &c. Diet.

X. Clothing.—The clothing is appropriate to climate, season and duty. I have frequently remarked on the boots and their unfitness for the native soldier, who does not wear socks, and could ill afford to provide them out of his pay. The same remarks still hold good. Clothing.

XI. Duty.—The men have been employed on their ordinary duties, drills, parades, musketry, and also assisted in the construction of the new barracks for the married men, occasional repair of cantonment roads, and in cutting grass for thatching the barracks. They also assisted in the construction of a temporary hospital which has been erected in the cantonment Number of nights in bed have been about— Duty.

Havildars	6
Naicks	9
Riflemen	9

XIII. Marches.—The head-quarters of the regiment left Dehra on the 18th November, and marched *vid* Roorkee and Meerut to Delhi to join the Camp of Exercise; arrived there on the 2nd December. The regiment formed part of the 2nd Division, and on the 3rd, marched to Naraina, about eight miles from Delhi, where the whole of the 2nd Division remained till the 3rd of January 1876. The Naraina plain is a bare sandy expanse with few trees; the water was provided from wells, and was considered good. The men were provided with straw to lie on in their tents, and the hospital was furnished with tarpaulins and straw. The duty consisted in the usual field-days, brigade parades, inspections, &c. The sanitation of the camp was carefully attended to, latrines regularly dug (by fatigue parties) and filled in; urinals in front of the lines. The filth-cart removed all refuse from the lines to selected spots, where pits were dug and the refuse buried. The cold was felt, as the wind generally rose about 8 A.M., and swept over the plain, carrying clouds of dust with it. This cold wind no doubt in some instances seemed to cause recurrence of ague in men who had been previously subject to it; but on the whole, during the stay of the regiment at this place, the health of the men may be said to have been good. Marches.

XIV. Hospital.—The old hospital in Dehra is still in use. The old cantonment has now been made over to the civil authorities, so that this hospital is now in the civil station. The new hospital (on modified standard plan) is in course of construction, and will be completed, I believe, in about twelve months more; it will be a great comfort to the sick when it is ready, for I have frequently described the great inconvenience from the present arrangement. During the cholera visitation in May, I saw how utterly impossible it was to carry out proper measures for the safety of the cantonment under these circumstances. The epidemic was very widespread and fatal in the civil station, and the hospital was in the midst of it. Supposing Hospital.

Digitized by Google

the contagion theory to be correct, the medical officer might be the means of bringing in the disease to cantonments after his hospital visits, and more particularly so, as several cases occurred amongst relatives of the men living in the vicinity of the old lines, and who were treated for the disease, use being made of the old, empty magazine building near the hospital.

Under these circumstances, I recommended to the commanding officer, that as there was no probability of the new hospital being ready for occupation for at least another year, that a temporary hospital should be built in the new cantonment, and when completed, that we should desert the Dehra hospital entirely; so that in case of future epidemics, all communication with Dehra could be completely shut off. A site was selected between the bazaar and lines. The matter met with the approval of the commanding officer and the Deputy Surgeon-General of the circle, and the building was commenced in June; but on account of the rains it was not completed till the beginning of the cold weather, and then was not considered quite dry enough to be safely occupied. This hospital consists of two long wards, and a verandah all round. It is built on a raised plinth of about 2 feet; mud walls and thatched roof, one end verandah being divided off at the corners for a dispensary and office: a room will be required for the hospital assistants. It is calculated that sufficient accommodation will be given for the usual number of sick. The ventilation is good, and it will be much cooler than the old Dehra hospital, whose floor and walls must be saturated with impure exhalations of forty years' occupancy. On the return of the regiment to the Doon, the sick will be moved into this building, and on the completion of the Government building, it will be used as the hospital for the women and children of the regiment. The hospital accommodation then for the whole regiment will be most perfect. Its vicinity to the Government hospital new building, will enable the hospital assistants to attend to the patients in it with little extra trouble, and its nearness to the lines will be a great inducement for the families to reside in it when really ill. The great distance of the old hospital in Dehra, almost shuts off the families from applying for aid, as they could not afford the time to go to and fro and leave their cooking and domestic affairs in the lines. All will be now changed. New hospital clothing has been provided regimentally, and all the charpoys have been condemned and replaced by new ones. The bath-room is regularly used by the patients. The hospital has been whitewashed inside and out during the year, and also after the cholera epidemic, and the building is in as good repair as its nature admits of.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment:—

Present	...	...	...	...	657·5
Absent	...	...	...	...	52·7
Total	...	...	...	...	709·12

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average number of sick.
Head-quarters, Dehra ...	1st January...	18th November	655·2	414	17	22·9	71·3	2·9	3·4
Head-quarters on march and Camp of Exercise ...	18th November	31st December	529·2	87	...	19·12	139·2	...	3·6
Depôt at Dehra	Ditto	Ditto	139·6	4	1	10·1	23·7	...	7·23
Total... ...	.....	... .	657·5	..505	18	22·13	75·28	2·73	3·36

Number of deaths in hospital, 18; out of hospital, 3; total, 21; per cent. of total strength	...	...	2·96
" invalided ... ... 29; " "	...	...	4·08
" sent on sick leave ... ... 7; " "	...	...	0·98
" of days spent in hospital, 7,827; per admission, 15·5; per man of total strength	...	...	11·03
" " " on sick leave, 910; per man, ...130· ; " "	...	...	1·25
Total temporary loss of service per man of total strength	...	...	12·

Principal causes of sickness.

XVI. Principal causes of sickness.—The total number of admissions has been 505. Five hundred and one at head-quarters, and four in the depôt. Had the regiment not moved, the admissions would have probably been less, as a great number of footsores took place as usual on the line of march. But even with this, there is an improvement over the preceding year: 520 admissions took place in 1874, and 505 during the year under report. Malarious diseases have as usual furnished the greatest number of admissions; 132 cases of ague were admitted and three of remittent fever. Seventeen cases of primary syphilis were treated, and four cases of secondary disease were admitted. Eight cases of phthisis pulmonalis were admitted, three of whom died in hospital. This disease is very common amongst the inhabitants of the outer range of hills. Conjunctivitis shows forty-eight admissions; this disease is at times prevalent in the lines. On such becoming known, inspections are made by the hospital assistants amongst the children and all cases treated. One hospital assistant visits the lines daily.

Syphilis.

Diseases of the respiratory organs furnish a total of 20. Two of these were cases of pneumonia, which terminated fatally. Ten cases of dysentery were admitted, and all treated by ipecacuanha in large doses. Hepatitis shows 13 admissions and three deaths. The total of admissions was largely increased by 53 cases of footsore.

Mortality

XVII. Mortality.—The mortality this year has been somewhat large; but when the nature of the diseases causing it is taken into consideration, such result will scarcely create

Digitized by Google

surprise. Seventeen deaths took place in head-quarters hospital. Two of these were due to pneumonia, three to phthisis pulmonalis, two to hepatitis, one to remittent fever, and three to epidemic cholera.

XVII. Epidemics.—Epidemic cholera took place in the Doon in May and June, and the regiment was attacked. A report was furnished of the visitation on the cessation of the epidemic, so that further discussion is now unnecessary. Epidemics.

XIX. Vaccination.—During the months of January and February vaccination went on steadily; but as this report is written in camp, and the books containing the vaccination returns are at Dehra, I cannot state the number vaccinated. As the regiment left the Doon in November before operations had commenced, I asked Dr. Pringle, the Superintendent of Vaccination of North-Western Provinces, to permit one of his men to go to the lines and operate on all the unprotected there. This he kindly consented to, and no doubt on the return of the regiment all will be found safe in this respect. Vaccination.

XX. Recommendations.—The recommendations made have already been detailed when describing the new hospital building. Recommendations.

XXI. Special observations.—During the year two cases of stone in the bladder were operated upon in the hospital. One of these was a kalassie who at last could not perform his duty. I found on examination that he was suffering from calculus. The usual lateral operation was performed, and a stone of three ounces in weight removed. The patient was an old man, and although nothing as regards the operation would lead one to expect such a result, he died the third day after the operation. The second case was in an old pensioned subadar of the 4th Goorkha Regiment who was living at Dehra. This case was most satisfactory, as he was discharged from hospital with wound completely closed and healed on the 14th day after the usual lateral operation had been performed. The stone was of small size. Special observations. Calculus.

Inspected by the Deputy Surgeon-General of the Meerut Circle on the 16th and 17th October. Mr. Smith considers the condition of the barracks for the married and unmarried sepoys to be all that can be desired as regards space and ventilation. Regarding the temporary hospital which was erected towards the end of last year in the new cantonment, Mr. Smith reports that it "is in every respect a most efficient one, and well adapted for the purposes for which it is intended, and when on the completion of the new hospital it will no longer be required for the reception of the men, it will be converted into a hospital for the women and children, and will thus form a most useful and necessary addition to the hospital accommodation for the regiment, while in case of epidemics it will always be available, and also invaluable." Inspection.

Improvements in the lines, such as laying out roads, planting trees, and perfecting the general drainage, have been steadily carried out. Water, whose primary source is a hill stream, is conveyed in a pucca channel from a branch of the Beejapore Canal, and is of most excellent quality, and Mr. Smith remarks that he "cannot conceive a purer water-supply." Lines.

The conservancy arrangements of the lines were quite satisfactory; there were no urinals in use, but no ill-effects or smell could be detected from their absence. All the details in hospital as regards the supply of medicines and instruments, and for the proper treatment and comfort of the sick, were indicative of the careful supervision bestowed on them by the officer in medical charge of the regiment, Surgeon-Major F. F. Allen, C.B., and by his subordinates. Conservancy arrangements.

Bengal Sappers and Miners—Roorkee.

Surgeon-Major A. Eteson has submitted the Annual Sanitary Report of the corps.

Years.	Stations.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Roorkee	95·8	1·6	2·4
1871 ...	Do.	99·	2·	2·2
1872 ...	Do.	98 5	2·1	2·9
1873 ...	Do.	92·6	1·4	2·1
1874 ...	Do.	130·2	·7	3·6
	Average	103·22	1·56	2·64
1875 ...	Roorkee	101·38	·96	2·65

I. Medical Officers.—The following medical officers have held charges in the regiment during 1875:— Medical Officers.

Head-quarters, Roorkee, Surgeon-Major A. Eteson, from 1st January to 24th November. Head-quarters, Delhi, Surgeon R. Blood, M.D., B.F., from 25th November to 31st December. Depôt, Roorkee, Surgeon J. A. Smith, B.F., from 6th November to 31st December. Detachment, Peshawar, two companies, Surgeon J. Young, from 1st to 22nd January; Surgeon J. McConaghy, from 23rd January to

Digitized by Google

31st December. Detachment, Rawal Pindi, one company, Surgeon-Major B. Kendall, from 1st January to 5th February; Surgeon-Major G. Watson, from 6th February to 13th August; Surgeon W. A. C. Roe, from 14th August to 8th October; Surgeon-Major G. Watson, from 9th October to 31st December. Detachment at Cherat, one company, hospital assistant Kurrum Deen, from 27th April to 13th August; Surgeon Meane, A.M.D., 14th August to 29th October. There was a small detachment of 62 men on the Duffla Expedition, from 1st January to 19th March, mostly under medical charge of hospital assistants.

Location and movements.

II. Location and movements.—The head-quarters, with seven companies (Nos. 1, 2, 3, 5, 6, 7 and 10), were at Roorkee from 1st January to 6th November; on the latter date leaving No. 1 depôt company and the recruits behind, the remainder marched to join the Camp of Exercise at Delhi, where they continued until the end of the year. On the 15th March, a detachment of two companies marched to Hurdwar to throw pontoon bridges across the Ganges during the fair. The sick of this detachment were included in the head-quarters' returns. The companies returned to Roorkee about the middle of April. During the absence of the head-quarters at Delhi, a depôt was formed at Roorkee till the close of the year. The usual detachment of two companies (4th and 8th) has formed part of the Peshawar garrison throughout the year. One of them goes to Cherat every year from April to October; and a small section was on special duty at Hazargurh.

Similarly, the 9th company has been on garrison duty at Rawal Pindi the whole year, with a section detailed temporarily for duty in Attock fort. A select detachment of 62 men who joined the Duffla Expedition in October 1874 returned to Roorkee 19th March 1875. Minor parties have been on duty under the Torpedo Committee in Calcutta, and attending divisional schools of instruction.

Topography and physical geography.

III. Topography and physical geography.—Roorkee has been occupied as a civil station about 30 years, since the Ganges Canal was first projected; and as a military cantonment since 1854, when Bengal Sappers and Miners were first removed here from Meerut. There has also been a wing of a British regiment located here since 1858. It is 65 miles north-east of Meerut, 28 east of Saharunpur, and 52 south of Dehra Dun. The climate is the same as that of the North-Western Provinces generally, tempered by its closer proximity to the Himalayas. Storms of thunder, wind and rain occur at intervals even during the hot season, bringing a pleasant relief to the prolonged heat. The thermometer seldom rises over 96° in a good house. The cold season is long and occasionally severe. The station has a very level aspect, with long avenues of trees marking the roads and canal; the soil very light and sandy; the drainage flows into the 'Solani,' a wide shallow stream which flows from the Sewalik watershed eastwards into the Ganges. The Ganges Canal is carried through the civil station; but no irrigation takes place near to it, and the general water level does not seem materially affected. All the drinking water of cantonments is obtained from brick-lined wells. There is never any scarcity. Its level is about 33 to 31 feet according to season; and there is in all good wells a minimum depth of 20 feet of water throughout the year. It has always borne a very excellent repute, and was reported by Surgeon E. G. May in 1870, after analysis, to be a very good drinking water. It lies on a limestone kunkur bed stratum, below a very fine sparkling sand. It is soft, clear and agreeable. All the wells are very carefully protected from surface pollution.

Cantonment.

The cantonment is kept clean and is altogether clear of jungle. There is very little tree growth except by roadsides and in one or two gardens. The ordinary village cultivation of the North-West surrounds it on all sides. There are neither marshes, rivers nor lakes of any magnitude in the vicinity; but about 20 miles to the east are the "Kadir" lines of the Ganges, which are annually flooded during the monsoon rains and probably favor the production of a local miasma. The sanitary condition of the civil station, which adjoins cantonments, is not so well cared for as it should be. There are far too many trees and luxuriant under-growth for the limited area. The drainage is imperfect; and the conservancy arrangements for servants and natives generally are very defective.

Meteorology and climate.

IV. Meteorology and climate.—There has been nothing unusual to record. The regular monsoon rain was considerably delayed, so that June was oppressively hot. I have observed that this has occurred very regularly in alternate years of late. There was plenty of stormy weather and much rain in the middle of May, which possibly delayed the arrival of the regular rains. A very heavy storm broke over the station on Monday night, the 10th May, and the first case of cholera which broke out in the Thomason College happened on the 14th May; and during the ten days the epidemic lasted, the weather remained variable, at times hot and sunny, at others cool and cloudy. There was no manifest coincidence or connection between the disease and these electrical storms.

Cholera in the Thomason College.

Lines, barracks and huts.

V. Lines, barracks and huts.—The remarks entered in my annual report for 1874 and previous years need not be repeated. The sepoys' lines are kept in good repair, and their sanitary condition is good, though not perfect. The regimental bazaar is clean, convenient, and not overcrowded. I should be glad if it could be removed to a site further outside the lines, at the south boundary of cantonments. At present the bazaar is placed very centrally, and the space occupied by it would, if left vacant, be of advantage for thorough perflation. But the change would involve so great an expense for compensation that I am afraid there is no chance of obtaining it.

Drainage.

VI. Drainage.—The remarks made in the Annual Sanitary Report for 1874 and preceding years are also appropriate for 1875. The system is entirely "surface" saucer drains, which open

Digitized by Google

into more or less deep cuttings. There is always a good deal of sun-evaporation when silt or badly-constructed culverts choke the out-fall. These defects are remedied as much as possible by yearly working parties, which clear the levels and facilitate surface out-flow. There is still a want of more raised foot-paths, to enable men to pass from place to place during the rains without wetting their feet.

Conservancy and latrines.

VII. Conservancy and latrines.—The conservancy arrangements have not been altered in any way since 1875. The majority of the sepoys and adult followers go afield, and there is no system for disposal of the ordure beyond a cantonment rule, that the latter should provide themselves with a small hand spade to cover it. Practically it remains in the adjoining nullahs till washed away. There is a small public latrine near the bazaar for the sick, the infirm, women and children. During the rainy season this becomes a nuisance; being open, the dry earth, when used, does not deodorize, and it has been found necessary to close the latrine. The boundary of cantonments is about to be extended 200 yards further south, and I hope that better arrangements, both as regards this latrine and the general conservancy of cantonments, will then be improved, by removing the former to the outer limits of the station, and by fixing certain sites in rotation to which all natives should be obliged to visit for purposes of nature, and which can be inspected and the ordure buried and cultivated.

Urinals for the Native soldiers.

Nothing has been done to correct what I consider a grave error of sanitation, in the construction of temporary urinals for the Native soldiers of the Sappers and Miners. In my report for 1874, I gave plans which showed the surface tanks, drain and blind well, 8 feet deep; the latter filled with rubble and covered with earth. It is certain that this system will ultimately end in affecting the purity of the water-supply. I have lately written on the subject, and recommended that the wells should be opened out, the contents removed, and fresh earth deposited. But even this is only a palliation. The urine should not be allowed to drain off into the earth, but should be collected and removed in gurrahs daily outside cantonment limits. There appears to be a difficulty in providing suitable conservancy carriage in Native corps.

Water-supply.

VIII. Water-supply.—As in 1874 and previously.

Diet, clothing &c.

Diet, clothing, exercise duty.—As in 1874 and previously. The average number of nights in bed has remained very much the same as formerly, *viz.*, 1 in 4 or 5 for non-commissioned officers, and 1 in 8 or 10 for sepoys. In detached commands the proportion for duty is somewhat heavier.

Marches and service.

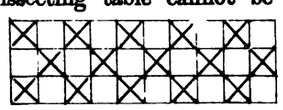
XIII. Marches and service.—There has been none of any importance in 1875. The detachment of 62 men which went on the Duffla Expedition at the close of 1874 (October) returned to Roorkee in March. The head-quarters and six companies marched from Roorkee to Delhi to join the Camp of Exercise in November, and remained there till the close of the year.

Hospital.

XIV. Hospital.—The change in the location of the sick of the regiment mentioned in my last annual report has now been carried out. It will be remembered that I wrote of the unsuitability of site of the native hospital, placed as it was in the heart of the European barracks and adjoining the married barracks; hence a danger of communicating infectious disease.

Early in February 1875, a considerable draft of Royal Engineers, with their wives and children, arrived from England, and the native hospital was taken up for their immediate accommodation. At first the native sick were placed in tents, but by the end of April a new hospital of temporary construction had been built on an open site adjoining the parade. It comprises a central ward divided by a partition wall, and holding thirty beds, two long verandahs, east and west, four corner rooms, *viz.*, office, dispensary, bath-room, and isolation room, with the usual servants' quarters and out-offices. The roof is of thatch, the floor beaten clay, batten doors, and glazed windows in each ward. There is plenty of superficial and cubic space for the ordinary number of sick, but in the event of epidemic disease, additional room would have to be provided in tents.

The hospital out-offices comprise two quarters for hospital assistants, very poor and insufficient, seven servants' houses, a cook-room, most limited in space, having regard to the average number of sick, which is separated by partition for Hindoos and Mahomedans, a dead-house and a privy. The dead-house is so small that the regulation dissecting table cannot be got through the door; there is no glazed window, nor any fastening to the door. The ventilation is by fenestrated sun-dried bricks of this pattern, and the floor is of beaten earth only without any drain. The executive engineer considers that a native hospital dead-house is a receptacle for the dead, and that *post mortem* examinations are not to be provided for. I am in correspondence on the subject, and hope to get the defects remedied. Manifestly, no *post mortem* can be held until they are; and even as a receptacle for the dead, there is every facility for the entry of rats, mongooses or even jackals and dogs at night.



Quarters of medical pupils are also urgently required. It is quite unreasonable to suppose that respectable youths will be attracted to the service unless some attention to their comfort is paid. These lads fresh from home feel very much the want of privacy and retirement; and I have no doubt many who now resign after a short trial of the profession would remain contented and happy if suitable quarters were invariably provided for them on first posting them to regiments.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	1028·83
Absent	110·91
Total	1139·74

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Roorkee ...	1st Jan. 1875	31st Dec. 1875	673·20	533	1	14·56	79·17	·14	2·1
Depôt at Roorkee ...	6th Nov. 1875	Ditto ...	40·88	29	...	1·59	462·37	...	3·8
Detachment at Peshawar ...	1st Jan. 1875	Ditto ...	193·71	374	...	9·11	193·07	...	4·7
Ditto at Rawal Pindi ...	Ditto ...	Ditto ...	107·	80	1	1·56	74·76	·93	1·4
Ditto at Duffla Expedition	1st Jan. 1875	19th Mar. 1875	14·	27	...	·45	914·15	...	3·2
Total ...	...	...	1,028·83	1,043	2	27·25	101·38	·19	2·65

Number of deaths in hospital, 2; out of hospital, 9; total, 11; per cent. of total strength	...	·96
„ invalided ... ... 42; „ „	...	3·69
„ sent on sick leave... ... ... 37; „ „	...	3·25
„ of days spent in hospital, 9,946; per admission, 9·53; per man of total strength	...	8·73
„ „ on sick leave, 5,895; per man, 159·3; „ „	...	5·17
Total temporary loss of service per man of total strength	...	13·90

Principal causes of sickness.

XVI. Principal causes of sickness.—Ague, as usual, stands beyond all distance first of all in the catalogue of prevalent diseases. The Peshawar detachment suffered most, giving a gross total of 251 admissions for this one disease out of 374 total. Roorkee, both head-quarters and depôt, comes next with 153 out of 534; but the difference of 'strength' in the two stations makes the percentage much smaller. Rawal Pindi, on a strength of 107, much more than half of Peshawar, has only six admissions: strange! that 100 miles which separates the two stations should present such a constant and enormous difference in this single complaint. Looking through the list of figures, I note no other disease, either by unit or class, which requires comment; 1,148 blisters of feet have been a very numerous class at head-quarters, to be explained by the drills and parades which are natuarally more prolonged and numerous there. Moreover, the recruits furnish the largest proportion of these admissions, from the rawness of their feet to be first put to drill in boots.

Syphilis.

Syphilis, whether primary or secondary, has been very moderately present. It will be remembered that the admissions from this disease were much above the average in 1874, owing to the detachments in the famine districts contracting the disease very freely, and the congener of syphilis, rheumatism, whether real or feigned, invariably claims a certain proportion of admissions in the native army.

Skin diseases &c.,

Skin diseases are tolerably frequent; respiratory affections few and trivial. Diseases of the digestive organs are insignificant in every column. Contusions, boils, ulcers and minor local injuries are abundant. As explained frequently in former annual reports, these injuries result from the daily field work, the handling of tools, and from manual labour, which are incidental to the daily routine of a sapper's duty.

Principal causes of mortality.

XVII. Principal causes of mortality.—There have been altogether 11 deaths, *viz.*, two in hospital, one of them at Roorkee and one at Rawal Pindi, both ascribed to ague. The medical officer reports the Rawal Pindi death to have occurred in a weakly patient without any unusual or disturbing symptoms. In the Roorkee death, the preliminary attack of ague relapsed into a remittent type; afterwards pneumonia appeared intercurrently, and was the immediate cause of death. A Goorkha recruit, who was sent home on sick leave, died some months later in the hospital, 3rd Goorkhas, at Almora. A fourth man died in the lines of heart-disease a few days after having been invalided. A fifth case was a recruit who was supposed to have been drowned in the canal, though I believe his body was never recovered. Lastly, six men died at their homes while on sick leave, nearly all from chronic disease, accompanied by organic changes, which foretold that result, such as phthisis, hæmatemesis, anæmia and bronchial asthma.

It will be observed that all these deaths represent individual attacks of disease rather than any prevailing or unusual types; moreover, the numbers are altogether too few to indicate any influence of the diseases on the general health of the regiment.

Epidemics.

XVIII. Epidemics.—A single case of cholera, followed by recovery, occurred in a camp-follower, *viz.*, the hospital dresser on 16th June. The building was emptied of patients, and left vacant a fortnight; no more cases appeared. A special report on the visit of cholera to Roorkee in 1875 having been submitted by me, it is unnecessary to go again into details. The particulars of the above cases are included in it.

Vaccination.

XIX. Vaccination.—I have nothing more to add than what I wrote in my annual return for 1874. In consequence of the severity with which the pustules were ruptured during drill, and the unsatisfactory results all round, I have ceased to vaccinate the recruits of the year.

Inspection.

Inspected by the Deputy Surgeon-General of the Meerut Circle on the 28th October 1875. He reports that the sanitary condition of the lines

Digitized by Google

was satisfactory, and the conservancy had been well attended to. Mr. Smith, however, objects to the construction of the urinals, and considers that ultimately they are likely to become a source of unhealthiness. The medical officer concurs in this opinion, and proposes having the present blind wells opened, the urine-saturated soil at their bottoms removed and replaced with dry-earth as a palliative measure.

The hospital is described as a temporary erection, and from the badness of the materials, the roof is not likely to last long without being renewed. This building affords ample accommodation for the ordinary number of sick, but, in the event of any unusual sickness or epidemic, would not answer. The supply of medicines was ample for all the requirements likely to be made on them, and the instruments were in clean and serviceable order.

ROHILCUND DISTRICT.

(INCLUDING THE STATIONS OF BAREILLY, MORADABAD, SHAHJAHANPUR AND ALMORA.)

Average daily strength present during the year	...	Cavalry	417·8	Infantry	1846·1
Average daily sick per cent. of average strength	...	,,	1·07	,,	2·97
Ratio of mortality per cent. of average strength	...	,,	1·31	,,	·70

16th Regiment Bengal Cavalry—Bareily.

I. Surgeon-Major J. E. Tuson, M.D., continued in charge throughout the year, and has submitted the following report. Medical charge.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Rawalpindi, March 1868, from Morar.	185·6	1·2	4·1
1871 ...	Peshawar, October 1870	94·6	1·5	2·6
1872 ...	Ditto ditto ...	156·1	2·2	2·
1873 ...	Ditto ditto ...	55·01	3·5	1·2
1874 ...	Bareilly, January 1870	39·9	·43	1·49
	Average ...	106·14	1·76	2·28
1875 ...	Bareilly	23·69	1·31	1·08

II. The 16th Bengal Cavalry has been stationed at Bareilly during the past year; a detachment of 50 sabres being sent to Moradabad. Location.

IV. Meteorology.—The rainfall during the past year amounted to 50·9 inches. During the months of April, May and June, the heat was remarkably great, and the atmosphere sultry and oppressive. Meteorology.

V. The lines are well kept, and very orderly. The men's huts are sufficiently capacious and ventilated. Lines.

VI. The drainage and water supply are the same as described in my last report for 1874. No material changes having occurred, it were a matter of supererogation to recapitulate. The bazaar supplies are good, and the clothing of the regiment suitable. Drainage.

VII. Duty.—There is no duty prejudicial to health; the number of nights in bed during the year being 6·29 hebdomadally. Duty.

Occupation.—Beyond the usual routine of regimental drill and parade, the men have little or no other occupation. In my annual report for 1873 of the 2nd Native Infantry, I adverted to the beneficial effects of the men being employed on some station improvements, as was adopted in the Erinpoora Irregular Force, and also by the Guides. I cannot help feeling that regiments in the Native Army might have some occupation assigned to them which would increase their physique, and perhaps tend to improve their *morale*. In the Erinpoora Irregular Force, the station was much improved and ornamented by the industry of the men of the corps. At Hoti Murdan the Guides voluntarily devoted themselves to the improvements of the station; roads were made, gardens laid out, and they generally made themselves useful. This led to the men becoming accustomed and attached to their officers, who generally supervised the work. I venture to revert to this subject, as it appears to me to be so advantageous to the men (as I can testify from personal observation), and certainly improves their physique and moral tone. A regimental garden would afford the men some occupation and amusement, and the proceeds would be a wholesome addition to their diet. Occupation.

No remarks are called for regarding the conservancy, water-supply, diet, &c., beyond that they have been well attended to during the year, and there has been no cause for complaint regarding them.

Digitized by Google

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	...	...	417·87
Absent	...	...	...	...	...	37·07
					Total ...	456·95

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters, Bareilly ...	1st Jan. 1875	31st Dec. 1875	365·07	91	4	4·19	24·92	1·09	1·13
Detachment at Moradabad ...	Ditto	Ditto	52·80	8	...	0·34	15·15	...	0·64
Total ...	...	...	417·87	99	4	4·53	23·69	0·95	1·08

Number of deaths in hospital 4; out of hospital 2; total 6;	per cent. of total strength	...	1·31
„ invalided 12;	„ „	...	2·62
„ sent on sick leave 1;	„ „	...	0·22
„ of days spent in hospital 1,655; per admission 16·71;	per man of total strength	...	3·62
„ „ on sick leave 99; per man 99;	„ „	...	0·22
	Total temporary loss of service per man of total strength	...	3·84

I have also drawn out a comparative statement of the ratio of sickness between two years at Peshawar and two years at Bareilly, and the latter station will show a highly favourable antithesis to the more insalubrious climate of the Frontier Station.

Year.	Station.	Per cent. of Strength.			Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily average sick.			Admissions.	Deaths.	Daily average sick.
1872 ...	Peshawar ...	156·67	1·97	2·03	1874 ...	Bareilly ...	39·85	0·24	1·47
1873 ...	Ditto ...	119·38	4·06	3·06	1875 ...	Ditto ...	23·69	0·95	1·08
Average of two years ...		137·97	3·01	2·54	Average of two years ...		31·77	·59	1·27

The admissions into hospital during the years 1872 and 1873 at Peshawar were 137·97;—whereas for 1874 and 1875 the total number at Bareilly amounts to 31·77, showing a difference of 106·20. The general health of the men has materially improved since the regiment has been located at this remarkably healthy station.

General observations.

XX. General observations.—The regiment, in a hygienic point of view, is satisfactory, and I have no remarks to make regarding any insanitary condition. In continuation of my former report for 1874, I have much pleasure now to submit for the favourable consideration and approval of the Surgeon-General, that four duffadars in each troop have been thoroughly instructed in the minor branches of surgery. I have personally examined them all, and they are quite competent to detect and bandage up any fracture. They also know the different forms of fracture that each bone is liable to. They understand how to control hæmorrhage by compressing the main arteries, and are competent to apply a tourniquet. In the event of service or marching, I should have much confidence in knowing that if there was a small detachment away from immediate medical aid, a duffadar would be with it who would be equal to any emergency. It would also be a great satisfaction for me to know that if, by chance, I was not near in case of any sudden accident, a duffadar would be efficient to render prompt and effective aid. In this undertaking I have received the cordial co-operation of Major Tophane, commanding the regiment. The duffadars are most willing to learn, and appear to take a great interest in perfecting themselves in all the different ways of bandaging, &c. On service, they would each be supplied with bandages and other appliances.

Instruction of duffadars in Surgery.

Inspection.

The Deputy Surgeon-General of the Lucknow Circle made his inspection of the hospital and lines of this regiment on the 8th October 1875. He reports that the lines were clean, well kept and thoroughly drained; the hospital was well ventilated, and afforded ample accommodation for the sick of the regiment. There were two conveniently arranged bath-rooms for the use of the patients.

Digitized by Google

Mr. Cannon considers that Dr. Tuson deserves the greatest credit for the instruction he has given to four of the duffadars on some surgical details, such as the application of bandages, the setting of fractures, the restraining of hæmorrhage, &c. There is no doubt that, in cases of emergency, and in the absence of the medical officer, such knowledge might be turned to very good account.

11th Regiment Native Infantry—Bareilly.

Years.	Stations.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dum-Dum, November 1868 from Dinapore,...	113·4	1·5	3·48
1871 ...	Ditto ditto ...	157·7	2·7	4·94
1872 ...	Bareilly, February 1872	97·1	5·69	4·28
1873 ...	Ditto ditto ...	51·	·57	1·66
1874 ...	Ditto ditto ...	42·6	·28	1·50
	Average ..	92·36	2·15	3·17
1875 ...	Bareilly	54·96	1·29	1·90

Medical Officers.

I. *Medical Officers.*—Surgeon W. E. Moynan held medical charge of the regiment from the 1st January to the 15th February, and Surgeon-Major J. Duncan during the remainder of the year. A detachment, left at Bareilly on the regiment marching for the Camp of Exercise at Delhi, was under the charge of Surgeon-Major Tuson from the 17th November till the end of the year. Surgeon-Major J. Duncan has submitted the annual sanitary report.

Detachment.

Location and movements.

II. Location and movements.—The regiment was quartered at Bareilly from the 1st January to the 17th November, making the fourth season of its location at that station. On the date mentioned, a strength of 6 European officers and 513 Native officers and men marched for the Camp of Exercise at Delhi, where it arrived on the 30th November, and was engaged in the manœuvres of the camp for the remainder of the year. A detachment of 195 Native officers and men was left at Bareilly, where it remained till the 3rd January. Of the 98 men detached for famine relief duty at Durbunga in 1874, 45 were still absent at the beginning of the year. These all rejoined head-quarters in small parties during the months of January and February.

Meteorology and climate.

IV. Meteorology and climate.—No meteorological observations were recorded, as the only instruments in use were a thermometer and a rain-gauge of very rude construction. The rainfall of the past year is said to have been 48 inches, and was seven inches in excess of the average of the previous eight years.

Lines and barracks.

V. Lines and barracks.—The lines and barracks have been described in the annual reports for 1872 and 1874. During the year, eight new barracks were erected, four on each flank of the old ones, and uniform with those previously existing. By these new barracks the accommodation has been increased by one-half, and now each man has 50 superficial feet and 480 cubic feet of breathing space. To make room for the new barracks, the huts for the bandsmen and kalashies were cleared away, and new ones were constructed for them in rear of the cook-houses.

Drainage.

VI. Drainage.—The drainage remains the same as described in previous reports. The highest flood level during the rains was two to three feet below the site of the lines; and this level was attained on only two occasions for about 48 hours. The depth of the subsoil water below the surface in the lines varied from 19 feet before to 12 at the end of the rains.

Conservancy.

VII. Conservancy.—The conservancy of the station and lines was carried out satisfactorily, on the same system as in former years. Both movable latrines over trenches and fixed sirkee tatees were in use. The former are the best, and, being covered, were chiefly resorted to during the rains.

Water-supply.

VIII. Water-supply.—There are four wells for the supply of drinking water; one for the hospital, two for the lines, and one for the regimental bazaar. In the first three, the water remained good and plentiful all the year, the depth varying from 16 to 24 feet. The bazaar well during March became nearly dry, and the water bad to the taste, and on an attempt being made to clean it out, it fell in. A new well was then sunk, but the funds available being insufficient to afford pucka masonry, it threatened to fall in at about the same depth as the old one, and the work was consequently discontinued. The water in this well may, therefore, be expected to become scanty and bad in the dry season. The wells for the use of the sepoys are covered with open gratings on which the men stand with one or both feet in drawing water, and any filth adhering to the feet is pretty certain to find its way into the well. In this way, dangerous pollution of the water might unsuspectedly take place. Some bathing and rinsing of clothing go on on the pucka platform surrounding the wells, and there being only a trench in the ground to conduct away the waste water, a portion of it must percolate

Pollution.

Digitized by Google

back into the wells. The hospital well is uncovered. Clothing is washed in the stream, which runs about 400 yards east of the lines. This stream is also resorted to for bathing.

IX. Diet.—The regiment being recruited from Oudh, the North-West Provinces and Behar, the diet of the men is that customary with natives of those parts of the country. Food supplies of all kinds habitually consumed by them, including vegetables, have throughout the year been procurable at moderate prices. Parched gram, or in warm weather suttoo, is a good deal used by the men when on any account they are prevented from cooking their meals at the usual time. Attacks of dysentery and diarrhœa are often referable to this kind of diet; but nearly five-sixths of the regiment being Hindoos, owing to caste prejudices its use is occasionally unavoidable, and all that can be done is to warn the men against taking it unnecessarily. As being probably connected with diet, I may under this head refer to the great frequency of ascarides lumbricoides in the intestines. There have been no admissions into hospital for worms; but 35 patients admitted for other diseases voided ascarides lumbricoides on the administration of anthelmintic medicines, which, I need scarcely say, were given only when there was reason to suspect the presence of worms. The sepoys, I believe, are not peculiarly liable to suffer from these parasites. They are quite common among the civil population of Bareilly; and when civil surgeon of Chittagong, I found them in 70 per cent. of the dead bodies sent me for examination by the police. If a similar investigation were made by civil surgeons all over the country, a strong argument would probably be found for the abolition of the salt tax. Chewing tobacco mixed with lime is very common in the regiment. The practice leads to a congested and swollen state of the gums, such as might, on a cursory glance, be mistaken for the effect of mercury. The gum in front of the lower incisors is first and chiefly affected; and, in this situation especially, ulceration and loosening of the teeth not unfrequently take place. The effect appears to be produced, partly by topical action, and partly indirectly through disorder of the digestion. Every opportunity is taken to advise the discontinuance of the practice.

Clothing. *X. Clothing.*—As has been pointed out in several previous reports, the ammunition boots worn by the men are very liable to cause blisters of the feet. Last year, 74 such cases c ame under notice, of which 39 occurred during the march and at the Camp of Exercise, and were treated out of hospital. The remaining 35 were all treated in hospital, the men being detained in every case till fit for full duty. The average time spent in hospital was nearly eight days. Deep ulcers had formed in many of the cases before admission. Either an improved pattern of boot, or the addition of socks to the outfit is required. Both the cold and hot-weather uniforms are suitable; and the men are well provided with native clothing.

Duty and employment. *XI. Duty and employment.*—The duties have generally been light and never excessive. The average number of continuous nights in bed for the year has been 12·9. Sepoys under 16 years' service were practised in running drill—300 to 1,000 yards—in the cold weather. No injury resulted.

Exercise, &c. *XII. Exercise, &c.*—The great majority of the men, when off duty, appear to take little exercise beyond what is involved in cleaning arms and accoutrements, cooking, bathing and an occasional visit to the bazaars. A few engage in wrestling.

Marches, &c. *XIII. Marches, &c.*—As before stated, the regiment marched from Bareilly for the Camp of Exercise at Delhi on the 17th November, leaving a detachment, including all the sick, in quarters at Bareilly. With the exception of a single halt of one day at Gazeeoodeennugger, an ordinary march of, on an average, 11¾ miles was made daily; and the camp assigned to the regiment at Delhi was reached on the 30th November. On the march, the only cases of sickness were one of dysentery, one of synovitis, and two slight injuries, besides some 30 cases of sore feet not requiring admission to hospital nor carriage. The camping grounds were all clean and dry, though some seemed disadvantageously situated as regards drainage. One of the marches,—that from Opheyra to Pilkwah in the Meerut district,—is too long, being 17 miles, instead of 14 as stated in the route book. The camping grounds, with the exception of those of Rujjubpoor in Moradabad, and Ghurmooktesur, Opheyra and Pilkwah in Meerut district, are provided with wells. At Futtehgunge the well is situated close to a filthy-looking pond, and the water was greenish and bad to the taste; and the one at Kumora Dhumora had a depth of only one foot of water, which was quite unfit for use. All the Government wells are placed close to the roadside, where they are likely to be used by travellers, and all, excepting those at Moradabad and Gunesh Ghât, are too shallow, containing less than four feet of water, which, on the wells being used, very soon became turbid from mud stirred up from the bottom. The regimental camp at Delhi was on the eastern side of the ridge, about two miles north of the Cashmere Gate of the city. The same ground was occupied all the time the regiment remained at the Camp of Exercise. The site was elevated and dry, the subsoil water being 30 feet below the surface. As a precaution in case of rain, small trenches were dug round the tents, and the earth excavated piled under the edge of the canvas, so as in some measure to keep out the wind. Trenches were used as latrines and urinals, in accordance with orders published on the subject; and the camp and neighbourhood were throughout maintained in a clean and wholesome condition. The duties were never excessive; but, as the men were occasionally kept out till after the time for their daily meal, many were in the habit of taking some gram and goor before going on parade. The weather was cold at night, but otherwise favourable, there having been no rain, with the exception of a few drops on one occasion; and the prevailing wind being westerly, from which the camp was to some extent protected by the ridge. In the hospital tent, the lowest temperature at sunrise was 43°, and the daily range

Digitized by Google

of temperature varied from 18° to 29° Fah: After arrival at the camp up to the 31st December, 19 cases were admitted into hospital, of which 4 were diseases of the lungs and air passages, ascribable to cold, 10 dysentery, apparently due in nearly every instance to eating grain, and 1 of mumps, contracted from the 33rd Regiment Native Infantry, encamped close by. The remaining four cases were not in any way attributable to camp influences. One case of pneumonia proved fatal in the regimental hospital tent; the man having become too ill to be moved after the general hospital was ready for the reception of patients. For slight ailments, such as blisters of the feet, the men were not admitted into hospital, but were employed on light duties in the camp, while under treatment. Eleven cases were transferred to the general hospital; and 7 of them were still under treatment at the end of the year. Pneumonia.

XIV. Hospital.—No alterations have been made in the hospital buildings. The sirkee lining applied to the roof in the end of 1874 has effected a considerable reduction in the temperature of the hospital, during the hottest part of the day; the highest recorded at 2 P. M. last year having been 103° against 109° Fah: in 1874. The improvements still required are two partition walls, glass windows, and a dead-house. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present		620·39
Absent		77·9
Total ...		698·29

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Bareilly ...	1st Jan. ...	16th Nov. ...	608·89	318	3	12·12	59·57	·56	1·99
Ditto marching .	17th Nov. ...	30th Nov. ...	513·	4	...	1·5	20·33	...	·29
Ditto Camp, Delhi	1st Dec. ...	31st Dec. ...	515·14	19	1	6·54	43·42	2·28	1·26
Detachment at Bareilly ...	17th Nov. ...	31st Dec. ...	179·42	...	...	2·22	...	...	1·23
Total ...	.....	.....	620·39	341	4	11·81	54·96	·64	1·9

Number of deaths in hospital 4; out of hospital 5; total 9; per cent. of total strength	...	1·28
„ invalided ... ... 51; „ „	...	7·30
„ sent on sick leave ... ... 7; „ „	...	1·0
„ of days spent in hospital 4,311; per admission 12·64; per man of total strength	...	6·17
„ „ on sick leave 632; per man 90·28; „ „	...	0·9
Total temporary loss of service per man of total strength	...	7·07

The year compares unfavorably, as regards both sickness and mortality, with 1874, and to a slight degree also with 1873. Compared with 1874, there is an increase of 95 admissions into hospital, and of 2 deaths in, and 5 out of, hospital. The difference is due to the greater prevalence of intermittent and remittent fever, phthisis, and other diseases of the lungs, bowel complaints, and syphilis. In the classes of "integumentary diseases" and "injuries," there has been a slight decrease. The reasons for invaliding in 18 cases were defects of vision, to which attention was specially directed last year, and in 4, mental incapacity. Of the men on sick leave, 5 were suffering from pulmonary phthisis, and might as well have been brought before special invaliding committees, and discharged from the service. The temporary loss of service from sickness would have been greatly diminished by this course, and the deaths out of hospital reduced to 1. They were sent on sick leave at their own earnest requests. The amount of pay to which they have become entitled while on leave has in no case exceeded the gratuities which they would have received if discharged from the service.

XVI. Principal causes of sickness.—The most frequent form of sickness has been malarious fever. Of the 341 admissions into hospital, 82 have been for intermittent, and 11 for remittent fever. The climate of Bareilly, however, is not accountable for the whole of this sickness, a tendency to attacks of fever having, in a number of the patients, been contracted in more malarious localities. The occasion of the attack in 11 of the cases was a slight catarrh; and ascarides lumbricoides, in the 21 cases in which they were found, by impairing the general health, and consequently the power of resisting the malarious influence, must also be regarded as a subsidiary cause. In 38 cases there was enlargement of the spleen, and in 8 enlargement of the liver also. Principal causes of sickness.

The most prevalent disease, next to intermittent fever, has been dysentery, for which there have been 40 admissions. Imperfectly cooked food was the proximate cause in a considerable number of cases, and lumbrici were expelled in 7. Phthisis and other lung diseases have swelled the daily average sick out of proportion to the number of cases. The admissions have been 4 of phthisis, 11 of acute and chronic bronchitis, 4 of acute and chronic pleurisy, 2 of pneumonia, and 1 of asthma. As one element in the causation of the cases of phthisis, and probably also of some of the others in this list, the insufficiency of accommodation in the barracks may be adduced. Dysentery. Lung diseases.

Digitized by Google

Syphilis.

Syphilis has been more common than is usual in the regiment. The cause seems to have been the employment of a small number of the men on famine relief work, in 1874-75, from which 3 returned with the primary disease.

Principal causes of mortality.

XVII. Principal causes of mortality.—The deaths in hospital have been: 2 from pneumonia, 1 from intermittent fever, and 1 from perforation of the small intestine. One of the deaths from pneumonia took place on the 21st day of the disease, after profuse suppuration and the formation of cavities in the upper half of the right lung. There is nothing to distinguish this case from cases of lung destruction usually classed as phthisis, except the rapidity with which it ran its course. The circumstances under which the second death from pneumonia took place have been referred to in paragraph *XIII.* It was an ordinary case of acute pneumonia, and requires no further remark. In the case of intermittent fever, death took place by collapse, coming on at the end of a paroxysm of fever. The man who died of perforation of the bowel was admitted into hospital for what appeared to be an ordinary case of intermittent fever, on the second day of the illness. The fever was checked by quinine, after two days' treatment, but returned on the third day, the quinine in the meantime having been discontinued. The bowels continued regular, and he took his food fairly—8 to 10 chittacks of solids daily—till the ninth day from the first paroxysm of fever, and no abdominal pain had been complained of. On this day, after taking his daily meal as usual, he had an attack of vomiting, followed by severe pain in the abdomen, and death in 36 hours. On *post-mortem* examination, acute peritonitis, and a perforation of the ilium, 9 inches above the ilio-cœcal valve were found. Peyers patches, in the terminal portion of the ilium, were the seat of clean, circular ulcers, from $\frac{1}{12}$ to $\frac{1}{4}$ inch in diameter, with thickened edges, one of the largest of which had perforated the bowel. Only one ulcer was situated in each patch, and the glands of the portions not involved in the ulceration seemed in the normal condition, the outline of the patches being with difficulty made out even with transmitted light. The mesenteric glands, in connection with the diseased portion of the intestine, were slightly enlarged, but contained no tubercle. The only other abnormal appearance was slight enlargement of the spleen. Four of the men who died out of hospital had been sent on sick leave on account of phthisis, one in 1874, and three in 1875. The fifth death out of hospital was that of a sepoy at his home on short leave, who was reported to have died of cholera.

Epidemics.

XVIII. Epidemics.—One case of small-pox was admitted into hospital on the 9th, and one of chicken-pox on the 26th January. Both patients had been employed on famine relief duty; and in both the disease seems to have been contracted on the journey back from Durbhunga, the fever in the former having commenced in the train, and in the latter on the fourth day after arrival at Bareilly. They were treated in isolated grass huts, which, on the discharge of the patients, were burned. On the 23rd March a case of cholera occurred, the origin of which could not be traced. The only other cases heard of within the district about that time were 2, a few days afterwards, among a party of invalids proceeding to Nynee Tal, one of which began in the train before arrival at Bareilly. The measures prescribed for adoption on the outbreak of cholera were minutely carried out. On account of the prevalence of cholera in several parts of the country, all men granted leave were subjected to a few days' quarantine on return, during which bathing and the washing of all clothing and other effects were insisted on. One man died of cholera at his home, and one was taken ill of the disease while returning from leave, but recovered. At Delhi there was one case of mumps, clearly due to contagion. The patient admitted having frequently visited his caste fellows in the 33rd Regiment Native Infantry, among whom the disease had for some time been prevalent. He was treated in an isolated hut; and the men were forbidden by the commanding officer to visit the camp of the 33rd Regiment.

Cholera.

Vaccination.

XIX. Vaccination.—Nine men having slight or no marks of small-pox were vaccinated. The result in six cases was successful, and in the other three doubtful. With the exception of two, all the rest of the men have either had small-pox or have been vaccinated. The man who was admitted into hospital for small-pox had previously been inoculated, but had no small-pox marks.

Special observations and remarks.

XXI. Special observations and remarks.—Eighty-five recruits, nearly all natives of Oudh, have been enlisted within the year. On enlistment, their ages were from 16 to 24 years, their heights from 5 feet 7 inches to 5 feet 11½ inches; and their chests' measurements (over the nipples with the arms stretched above the head) at the end of complete expiration, from 31 to 36 inches. A good many were rather spare, apparently from under-feeding. All except 4 had some marks of small-pox; 2 had been inoculated; and 1 only vaccinated.

Inspection.

Mr. H. M. Cannon, M.B., Deputy Surgeon-General of the Lucknow Circle, made his inspection of the lines and hospital of this regiment on the 8th October 1875. Mr. Cannon reports as follows of the increased accommodation afforded by the erection of eight new barracks, *viz.*, "The accommodation is now sufficient and suitable, and the ventilation is good." The lines and bazar were thoroughly clean and well drained. Of the several improvements recommended by Mr. Cannon last year, "the only one carried out has been the application of a sirkee lining to the roof so as to leave a small space between it and the tiles." This, it is reported, has been a success, as the highest temperature observed at 2 o'clock P.M. in 1875

Digitized by Google

was 103° Fah: against 109° Fah: in 1874. Division walls and glass windows in the hospital are considered to be very necessary. There is no dead-house, and the accommodation for the hospital staff is not so good as is desirable.

45th (Rattray's Sikhs) Regiment Native Infantry—Moradabad and Shahjahanpur.

I. Medical Officers.—Surgeon W. W. Galloway, by whom this report has been written, was in medical charge throughout the year, except from the 5th May to the 2nd June, when he was absent on privilege leave. His duties during that period were performed by Surgeon-Major Barnawell, of the British Medical Department. Surgeon-Major Loch, Civil Surgeon of Shahjahanpur, had medical charge of the left wing at that station until the 5th April, when he was relieved by Surgeon-Major FitzGerald, who remained in charge until the 12th November, when the Wing marched to join the head-quarters at Moradabad. Surgeon Bovill, of the 16th Native Infantry, had medical charge of the depôt at Alipore from the 22nd December to the end of the year. The detachment to form the depôt was during the march in medical charge of passed medical pupil Jubboo Singh, from the 12th to the 26th November. Hospital Assistant Mayetoolah had charge from the latter date to the 22nd December. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Mooltan, December 1868 from Jullundur ...	82·2	1·89	4·01
1871 ...	Ditto Ditto	61·3	1·15	4·37
1872 ...	Moradabad and Shahjahanpur, February 1862	68·9	1·52	8·18
1873 ...	Ditto Ditto	73·6	·66	2.43
1874 ...	Ditto Ditto	90·3	·25	3·30
	Average	75·26	1·09	4·46
1875 ...	Moradabad and Shahjahanpur	82·52	·42	2·52

II. Location and movements.—The head-quarters and right wing remained at Moradabad until the 25th November. The left wing remained at Shahjahanpur until the 12th November, when it marched to Moradabad and joined the head-quarters on the 19th of the same month. The regiment then on the 25th November went from Moradabad to join the Camp of Exercise at Delhi. It reached Delhi on the 3rd December, and next day joined the 2nd Brigade of the 3rd division at Camp Bussai, about 5 miles from Delhi, where it remained for the rest of the year. A detachment of 134 men marched from Moradabad on the 12th November to form the depôt of the regiment at Alipore, near Calcutta, where the regiment is to be stationed after the Camp of Exercise. They were joined near Fatehgarh, on the 23rd November, by 44 men who had been left behind by the left wing at Shahjahanpur. The detachment, now 178 strong, marched as far as Allahabad, and then went by rail to Calcutta, which it reached on the 21st and 22nd December. It remained at Alipore during the rest of the year. Location and movements.

IX. Diet.—There has been a good supply of the usual articles found in a regimental bazar. I generally looked at all the articles of diet while making my weekly inspections, and they are daily inspected by the native officer on duty. There was very seldom any cause for complaint. The men as a rule feed well. The prices have been moderate, and no compensation for dearness of provisions was required to be drawn during the year. Diet.

X. Clothing.—There has been no change in the clothing. The Snider rifle has been given, instead of the Enfield, to the men, who seemed to be highly delighted at the exchange. A black leather shoe is worn instead of the ammunition boot, and has been found to answer very well. The old sepoys are well provided with under-clothing, but the recruits on first joining are, as a rule, very badly provided. Clothing.

XI. Duty and employment.—The duties have not been excessive. At the Camp of Exercise there was a good deal of marching about; but it had a decidedly favourable influence on the health of the men. The number of nights in bed for the different ranks have been—Havildars 7·83, Naicks 10·08, Buglers 11·25, Sepoys 6·69. Duty and employment.

XII. Exercise, amusements, and occupations.—The men are fond of wrestling and other athletic sports. They do not do much at gardening. There was very little ground available for the purpose at Moradabad. Exercise, amusements and occupations.

XIII. Marches and service.—The regiment marched to the Camp of Exercise at Delhi on the 25th November, and took part in the various movements of the troops collected there. The left wing marched from Shahjahanpur to Moradabad to join head-quarters. A detachment, as stated in paragraph *II*, marched from Moradabad to Allahabad, and then went by rail to Calcutta to form the depôt of the regiment at Alipore. The marching had a decidedly favourable influence on the health of the men. There were very few admissions for sore feet. Marches and service.

XIV. Hospital.—The same as last year. The accommodation was ample when the regiment left Moradabad. Arrangements were being made to build a dead-house, and quarters for the hospital assistant and medical pupil near the hospital. This was urgently required, as Hospital.

Digitized by Google

had been frequently represented; the building and out-houses were all kept in thorough repair throughout the year.

Sickness, mortality and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the regiment:

Present	...	592·53
Absent	...	111·97
Total	...	704·50

Station.	Period. From	Period. To	Strength.	Total numbers of: Admissions.	Total numbers of: Deaths.	Daily average number of sick.	Per cent. of strength per annum: Admissions.	Per cent. of strength per annum: Deaths.	Per cent. of strength per annum: Daily average sick.
At Moradabad, on march and Camp of Exercise.	1st Jan. 75 ...	31st Dec. 75...	377·15	259	2	7·99	68·67	·53	2·12
Shahjahanpore and on march to Moradabad.	1st Jan. 75 ...	19th Nov. 75...	217·57	196	...	7·09	101·66	...	3·26
On march and at Alipore ...	12th Nov. 75...	31st Dec. 75...	164·85	34	...	5·22	150·57	...	3·16
Total ...	.....	....	592·53	489	2	14·96	82·52	·33	2·52

Number of deaths in hospital 2; out of hospital 1; total	3;	per cent. of total strength	...	0·42
„ invalided	67;	„ „	...	9·51
„ sent on sick leave	8;	„ „	...	1·13
„ days spent in hospital 5,460; per admission	11·16;	per man of total strength	...	7·75
„ „ on sick leave 1,165; per man	145;	„ „	...	1·65
Total temporary loss of service per man of total strength			...	9·40

Measles.

There has been no unusual sickness, with the exception of a few cases of measles of a very mild type, which occurred towards the end of year. The number per cent. of strength per annum of admissions, deaths, and daily average number of sick is about the same as in the two previous years. The number invalided was, however, very large. This was to be expected, as, when the regiment was raised, many of the men who joined it were not young, and had become old and unfit for service. Very few men had to be sent on sick leave during the year, and the loss of strength from this is very small compared with previous years. Four were sent on sick leave from the hospital at head-quarters, and the same number from Shahjahanpur.

The following table shows the number of admissions, deaths, and number invalided per cent. of strength per annum for the last 9 years.

	Admissions.	Deaths.	Invalided.	Daily average no. of sick.
1867	233·9	3·29	0·15	9·38
1868	109·2	3·7	1·48	4·3
1869	126·2	1·6	2·25	5·8
1870	82·2	1·99	8·43	4·00
1871	61·3	1·15	10·67	4·37
1872	68·9	1·52	6·44	3·18
1873	78·1	0·88	11·44	2·55
1874	77·44	0·42	4·64	2·61
1875	82·52	0·42	9·51	2·52

Digitized by Google

XVI. Principal causes of sickness.—Ague, bowel complaints, and ulcers of the feet are the principal causes of admissions. Together, they form 60·32 per cent. of the total admissions—ague 27·81, bowel complaints 15·95, and ulcers 16·56 per cent. of total admissions. The ague was generally of a mild type and uncomplicated. Some of the cases of dysentery were rather severe; 3 had to be sent on sick leave and one died. Ulcers form about the usual average number of admissions. They were mostly neglected sores on the feet, and occurred most often in young recruits who did not march in time. They were generally caused by kicks from the feet of other men when at drill. During the marching there were very few admissions for sore feet. None of the other causes of sickness require to be specially noticed, except measles, which will be reported on under the heading of epidemics. Venereal affections furnished fewer admissions than usual. Principal causes of sickness.

XVII. Principal causes of mortality.—Two deaths occurred in, and one out of, hospital, during the year. The first death was that of an old sepoy who died at his home while on furlough. The cause of his death is not known. The next occurred in hospital in September, when cholera was prevalent. The man, an old sepoy, had been a long time in hospital, suffering from diarrhœa. The diarrhœa was cured, but he suffered so much from indigestion, that he was kept in hospital, and the disease changed to dyspepsia. Diarrhœa, however, set in again suddenly, and he died collapsed a few hours afterwards. At the *post-mortem* examination, amyloid degeneration of the liver and spleen and intestinal glands was found to exist. The other death in hospital was from dysentery, and occured in Camp at Delhi. The patient, a fine young sepoy, who came to hospital the day the regiment left Moradabad, died on the 13th December. Until the day before his death, although the case was seen to be a severe one, no danger was apprehended. He appeared to be getting on very well, when suddenly he complained of severe pain on the abdomen, which became swollen, and all the other signs of severe peritonitis set in. It was at once seen to be a case of perforation of the bowel and quite hopeless. No *post mortem* examination could be made, as there was only one hospital tent, the other tent being required to isolate the cases of measles. Principal causes of mortality.

XVIII. Epidemics.—Six cases of measles were admitted during the year. They were so mild, and the disease has spread so little, that it can scarcely be called epidemic. The first case occurred on the 23rd November. The patient had been admitted for ague, and it was only on the appearance of the eruption that it was recognized to be a case of measles. The man was at once transferred to the civil dispensary at Moradabad. The second case occurred 14 days later, in a sepoy who had been admitted 4 days previously for ague; and other 4 cases have occurred since, all on camp. It is difficult to diagnose the disease at first. In nearly all the cases the fever has been decidedly intermittent, and the eruption makes its appearance one day, and generally disappears the next. There were no complications in any of the cases, and all the patients recovered rapidly. The cases were isolated carefully, and no evidence of how it had arisen or how it spread could be obtained. The first 2 cases occurred in the right wing, the others came from the left wing, and the disease was not confined to any one company. Epidemics.

XIX. Vaccination.—As reported last year, all the old sepoys are protected, either by having had small-pox, or by having been vaccinated. I procured lymph and got all the young sepoys and recruits paraded, but they were all, without exception, well marked by small-pox; very few natives apparently escape the disease. The few children with the regiment who were not protected were vaccinated successfully. Vaccination.

XX. Recommendations.—Everything has been so satisfactory, that it has not been necessary to make many recommendations. Those which have been made have been generally on trivial matters, and verbally, and the officers commanding have always agreed to them. Recommendations.

XXI. Special observation.—This report has been so long delayed, owing to the regiment being at the Camp of Exercise at the end of the year, and to the imperfect records kept by the hospital assistant with the left wing and with the depôt, that to prevent further delay, I have not entered so fully into some points as I otherwise would have done. The recruits who joined during the year were, as a rule, a remarkably good class of men. Very few had to be sent back to their homes. The improvement was, no doubt, owing to the different parties sent on recruiting duty being strictly ordered on no account to take men below a certain standard. Height 5 feet 9 inches, and 34 inches round the chest. Special observation. Recruits.

Inspected on the 15th August 1875 by the Deputy SurgeonGeneral of the Lucknow Circle. The lines were then in good sanitary condition and clean; the huts were in good repair, but not well ventilated; however, as there was no overcrowding of the men, no bad effects have resulted. The clothing of the recruits was sometimes very insufficient, but was supplied as soon as brought to notice of the wing officers. A capital bathroom is attached to the hospital, and the sick use it freely. Mr. Cannon remarks that the 45th regiment is the healthiest in his circle, and for height, strength, and physique, he does not consider that it is surpassed in the army. Inspection.

Digitized by Google

3rd Goorkha (The Kumaon) Regiment—Almora.

Medical Officers.

Surgeon-Major G. M. Govan, M.D., has been in medical charge of the regiment throughout the year, and has written the annual sanitary report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Almora, April 1866, from Bhootan.	89·4	·7	3·9
1871 ...	Ditto ditto ..	95·6	1·8	3·12
1872 ...	Ditto ditto ...	79·2	2·06	3·93
1873 ...	Ditto ditto ...	106·6	·71	4·49
1874 ...	Ditto ditto ...	93·9	·69	·15
	Average	92·94	1·19	3·12
1875 ...	Almora	102·05	·41	4·44

First class hospital assistant Soondar Lall joined the regiment on the 3rd July 1862, is now in medical charge, detachment of 3rd Goorkhas at Pithoragarh. Second class hospital assistant Runjeet Singh joined the regiment on the 27th October 1871, is now at head-quarters, Camp of Exercise, Delhi. Second class hospital assistant Behary Singh joined the regiment on the 30th October 1875, is now left behind at Almora with the depôt of the regiment. Third class hospital assistant Abdool Mahmood Khan joined the regiment on the 8th October 1872, is now at head-quarters, Camp of Exercise, Delhi. Native medical pupil Chookhey Lall joined the regiment on the 30th July 1874, was at head quarters at Almora up to 29th May, when he proceeded to Patna Medical School. Native medical pupil Buldeo Pershad joined the regiment on the 9th July, and has been at head-quarters up to date.

Location and movements.

II. Location and movements.—The head-quarters of the regiment, averaging 445·95, has been stationed at Almora from commencement of the year until 12th November, when it marched for the Camp of Exercise, Delhi. A detachment averaging 111·07 strong has been stationed throughout the year at Pithoragarh, and was relieved every four months. A detachment averaging 64·45 has been stationed throughout the year in Naini Tal. A small detachment averaging 27·61 has been stationed at Ranikhet. When head-quarters marched from Almora for the Camp of Exercise, Delhi, a detachment of 90 men remained behind at Almora.

Meteorology and climate.

IV. Meteorology and climate.—This season has not been marked by any peculiarities, except that in Almora itself this year, as well as last, the rains have been heavier than usual, and there has been more cloud and mist drifting through the station, rendering the climate during the rains damper than usual. In former reports I have stated that the climate of Almora is considered to be, especially during the rains, a particularly dry one, far more so than that of Naini Tal, Ranikhet, or, indeed, than any other hill sanitarium in India; but for the last two rains, the climate has been anything but dry, even damper than Naini Tal. This alteration of climate may be accounted for by the fact that within the last few years the trees in the station have been vastly increasing in size and numbers.

Marches and services.

XIII. Marches and services.—The regiment marched for the Camp of Exercise, Delhi, on the 13th November, all sick being left behind at Almora. Throughout the march and manœuvres of the camp the regiment has been healthy, the daily average sickness from 13th November to 31st December being about 15·14 (strength at head-quarters 491·00); the majority of these not being regular cases of sickness, but sore feet, the result of marching and drilling with inferior boots and without stockings. A few rather severe cases of dysentery occurred, which I consider to have been occasioned by the change of diet from that of the hills to the plains, especially to the great quantities of crude vegetables consumed, many being in a state of semi-decomposition, being procured in this state at cheaper rates. Some of this sickness may also have been occasioned by the employment of *chabena*, which is at no time a very wholesome article of diet, especially to Goorkhas, who never employ it in cantonments, nor, indeed, except on occasions such as this,—when being out from early morning till late at night they are without the means of cooking for very many hours together.

Hospital.

XIV. Hospital.—The quarters referred to in the report for 1874 have not yet been commenced, and are much needed, there being now, as compared with the circumstances of the report of 1872, medical pupils to provide with accommodation.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	634·03
Absent	90·73
Total	724·76

Digitized by Google

Station.	Period		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Almora up to 12th November ...	1st Jan. 1875	31st Dec. 1875	445·95	492	3	21·34	110·32	00·67	4·78
Detachment at Pithoragarh	...	...	111 07	106	...	4·62	95·43	...	4·15
„ Naini Tal ...	...	...	64·45	39	...	1·55	60·51	...	2 40
„ Ranikhet ...	...	...	27·61	No returns from this detachment.					
Regimental depôt at Almora, from 13th November ...	13th Nov. 1875	31st Dec. 1875	12·56	10	...	00·75	593	...	5·97
Total ...	...	...	634·	647	3	28·26	102·05	·45	4·44

Number of deaths in hospital, 3; out of hospital, 0; total,	3;	per cent. of total strength	... 00·41
„ invalided	37;	„ „	... 5·11
„ sent on sick leave	5;	„ „	... 00·68
„ of days spent in hospital, 10,318;	per admission, 15·94;	per man of total strength	... 14·24
„ „ on sick leave, 750;	per man, 150;	„ „	... 1·03
		Total temporary loss of service per man of total strength	... 15·27

The sickness has been very much as is usual during healthy seasons in Almora; it is a little higher this than last year; but this is very much owing to there being many cases of sore feet this year, caused by the long march to Delhi, there having been no such marching last year.

Principal Diseases.	1874.	1875.
Quotidian ague	182	154
Primary syphilis	59	71
Secondary do.	14	20
Gonorrhœa	13	10
Rheumatism, chronic	30	35
Dysentery	27	26
Blister of feet	14	73

XVI. Principal causes of sickness.—With regard to the principal causes of sickness, I would beg to refer to remarks on this head regarding syphilis in my reports for 1873 and 1874, and again to point out that the returns of primary and secondary syphilis are still higher this year than ever, nor has anything been done in the way of protection by the introduction of the Contagious Diseases Act into the station. Principal causes of sickness

XVII. Principal causes of mortality.—The mortality has been very light, as there has been little sickness, and diseases have been of a mild character. Principal causes of mortality.

Principal causes of mortality.	1874.	1875.
Pneumonia	1	1
Dysentery	1	1
Syphilis, secondary	1	1

XVIII. Epidemics.—This regiment and the station of Almora have been singularly free from epidemics this year. Although cholera existed to some extent at the foot of the hills, none found its way into this station, not so much as a single case having occurred. I mention this particularly, as at Simla and some other hill stations north-west of this, cholera existed to a rather serious extent during the hot weather and rains. Great precautions were taken to prevent the approach of the disease into the station, by keeping drains thoroughly clean and disinfected, also by keeping persons from infected districts as much as possible out of the station. Epidemics.

XX. Recommendation.—The commanding officer assisted me in every way in keeping the station, lines, drains, &c., as clean as possible; the drains around the regimental lines were daily washed out, and disinfectants were freely employed; and the result has been so far satisfactory, that no epidemic disease has entered the station or lines. Recommendation.

XXI. Special observations and remarks.—Few cases of any interest have occurred in this hospital during the year, one only being considered worth special note, namely, a case of leprosy of the anæsthetic form, which was greatly benefited by a course of the gurjun oil Special observations and remarks.

Digitized by Google

Leprosy. treatment as practised by Dr. Dougall. Ram Chunder Khundka, Naik, H Company, 3rd Goorkhas, was admitted into hospital on the 25th March. He complained of numbness and impaired sensation of the fingers and toes, also of the skin covering the prominences of the cheek bones, and lobes of the ears, which were also indurated and thickened. The color of the skin all over the body is peculiar: it is of a purple hue, and has a coarse, wrinkled, glassy appearance, especially where exposed to the air. He commenced the treatment at about the end of March last. The gurjun oil and lime-water, in the proportion of 1 to 3, was rubbed over the whole body in the morning, and a dose of 1 drachm gurjun oil to 1 drachm of castor oil was taken internally. In the evening the same dose was administered internally, while a bath of soap and water was taken. This treatment was continued pretty steadily for nearly 4 months, at the end of which time not only had sensation been completely restored, but the induration of the skin covering the cheek bones and lobes of the ears had almost disappeared. In order to give the patient the full benefit of all advantages in favour of permanent cure after this course of treatment, I recommended him change of air, and sent him to his home in Nepaul, and upon his return his former symptoms have in no way returned; it is to be hoped the cure is a permanent one. This case shall be watched and reported upon again, as, should the cure remain permanent, it cannot but be one of the deepest interest to the profession, as confirming the value of Dr. Dougall's treatment of leprosy when employed in the early stage of that disease.

Inspection. Inspected by the Deputy Surgeon-General of the Lucknow Circle on the 16th October 1875. The lines were clean and barracks were well-ventilated. All the details in hospital for the proper care and treatment of the sick were in excellent order, carefully attended to, and reflected great credit on Dr. Govan's management and arrangements.

SIRHIND DIVISION.

(INCLUDING THE STATIONS OF UMBALLA AND JULLUNDUR.)

Average daily strength present during the year ...	...	Cavalry 383	Infantry 1,250·33	
Ditto sick per cent. of average strength...	...	„ 3·08	„ 4·34	
Ratio of mortality ditto ditto ...	...	„ ·21	„ 1·34	

15th Regiment Bengal (Cureton's Mooltanee) Cavalry—Umballa.

Medical Officers in charge. *I. Medical Officers.*—Surgeon-Major W. P. Adley from 1st January to 17th May; Surgeon Moynan 18th May to 14th July; Surgeon-Major Adley 15th to 21st July; Surgeon Moynan 22nd to 30th July; Surgeon-Major Raddock 31st July to 10th August; Surgeon Yeld 11th August to 4th November; Surgeon-Major Adley 5th to 29th November; Surgeon-Major Barnard 4th to 10th December, and Surgeon Edis 11th to 31st December. Medical officer in charge of detachment at Jullundur, Surgeon Grant 1st January to 29th October.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Peshawar, November 1869, from Mooltan.	194·9	1·7	3·9
1871 ...	Ditto ditto ...	110·5	1·5	3·7
1872 ...	Ditto ditto ...	152·8	2·3	3·8
1873 ...	Umballa, February 1873	58·9	1·7	1·9
1874 ...	Ditto	16·3	·21	2·5
	Average	118·68	1·48	3·16
1875 ...	Umballa	86·94	·22	3·08

Surgeon-Major Adley submitted the Annual Sanitary Report of the regiment.

Location and movements. *II. Location and movements.*—Head-quarters remained at Umballa from 1st January to 20th November, when it proceeded on its march to the Delhi Camp of Exercise, arriving there on the 2nd December. It joined in the first instance the cavalry division in the old cantonments, and subsequently the third division at Bussai and Budlee-ka-serai. A detachment of the regiment was posted at Jullundur (63 men) from 1st January to 29th October, at which date it was relieved to enable it to rejoin the regiment on its march to Delhi. A detachment of 59 men remained at Umballa from 20th November to 13th December, and 79 men at Cawnpore from 14th to 31st December.

Topography, &c. *III. Topography, &c.*—No special remarks are necessary regarding the topography, meteorology, &c., of Umballa, as they have been described in previous reports.

Digitized by Google

XI. Duties and employment.—The duties performed at the Camp of Exercise were sometimes heavy, consisting frequently of long marches and protracted field operations. Night duties were light, and the regiment did not suffer. Number of nights in bed, 6·66. Duties and employment.

XIII. Marches and service.—The regiment marched on 20th November for Camp of Exercise, and remained at the latter till the close of the year. The march from Umballa was a short one, occupying about 12 days, and no incident worthy of record occurred. The season was mild; the usual winter rains of the Punjab did not occur. Marches and service.

XIV. Hospital.—The regimental hospital at Umballa was fully described in 1873. At the camp, two hospital pals were found sufficient for the accommodation of the prevailing number of sick. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	383·16
Absent	...	...	...	...	74·43
			Total	...	457·59

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters, Umballa, and Camp of Exercise at Delhi	1st Jan. 1875	31st Dec. 1875	316·5	314	...	10·5	99·21	...	3·32
Detachment, Jullundur ...	Ditto	10th Nov. 1875	65	18	...	1·4	32·20	...	2·15
Ditto, Cawnpore ...	14th Dec. 1875	31st Dec. 1875.	59	1	...	...	34·47	...	...
Total ...			383	333	...	11·8	86·94	...	3·08

Number of deaths in hospital 0; out of hospital 1; total	1;	per cent. of total strength	...	·22
„ invalided	7;	„ „	...	1·53
„ sent on sick leave	12;	„ „	...	2·62
„ of days spent in hospital 4,339; per admission 13·03;		per man of total strength	...	9·47
„ „ on sick leave 2,464; per man ... 205·33;		„ „	...	5·38
Total temporary loss of service per man of total strength			...	14·85

XVI. Principal causes of sickness.—Comparative table of sickness, mortality and invaliding for the past eight years:— Principal causes of sickness,

Years.	Station.	Total number of admissions.	Remittent fever.	Rheumatism.	Dysentery.	Diarrhœa.	Pneumonia.	Bronchitis.	Pleurisy.	Deaths in hospital.	Invalided.
1868 ...	Mooltan ...	384	128	16	37	7	1	6	...	...	8
1869 ...	Mooltan to Peshawar ...	592	410	5	13	5	2	3	4	2	1
1870 ...	Peshawar ...	809	551	5	30	31	4	5	3	4	6
1871 ...	Ditto ...	439	200	16	28	19	6	15	4	5	16
1872 ...	Ditto ...	598	340	22	27	33	7	5	1	9	15
1873 ...	Camp of Exercise to Umballa	233	75	16	9	15	4	6	3	4	5
1874 ...	Umballa ...	295	126	22	6	9	3	19	1	1	2
1875 ...	Umballa to Camp of Exercise	333	113	28	15	12	3	5	1	...	7

The regiment has been very healthy during the year. There has been a slight increase in admissions from rheumatism, dysentery and diarrhœa above the returns of last year, but the cases have been of a mild type. In short, the health of the regiment has been so favorable as to afford no occasion for special comment.

XVII. Principal causes of mortality.—The mortuary register of the hospital was blank. There has only been one casualty in the regiment during the year, one man having died at his home on sick leave. This healthy condition is mainly attributable to the recovery of the men from the effects of Peshawar climate due to beneficial change of locality, and the attentive care of 2nd class hospital assistant Azeezoodeen. Principal causes of mortality.

XVIII. Epidemics.—Several cases of cholera occurred in the station of Umballa amongst European troops and native residents of some of the bazaars, but the regiment escaped the disease. Epidemics.

XIX. Vaccination.—None, for reasons given in former reports, *viz.*, the practice of inoculation amongst the men before enlistment. Small-pox has not occurred amongst the men of the regiment since 1868. Vaccination.

Deputy Surgeon-General J. N. Tresidder made his medical and sanitary inspection of this regiment at Umballa on the 23rd October 1875. He reports that on the day of his inspection he found the huts in good order, clean Inspection.

Digitized by Google

and commodious. After a heavy rainfall the surface water occasionally stands for some time before it can run off, but he considers the drainage to be generally good. Two kinds of latrine were in use, *viz.*, the "trench system" with matting screens and trench, and the trench method by means of the movable box on wheels. The ground is subsequently ploughed up and cultivated.

The hospital is built on the standard plan, and affords ample accommodation for 24 men in the main wards, and for as many more, if necessary, in the verandahs. All the arrangements and details in hospital for the proper care and treatment of the sick were very satisfactory.

32nd (Punjab) Regiment Native Infantry (Pioneers)—Umballa.

The following information has been supplied by Surgeon W. Moynan, M.D., in his Annual Sanitary Report—

Years.	Stations.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Ranikhet, October 186 8	95·4	·8	2·9
1871 ...	Ditto ditto ...	73·1	1·7	2·1
1872 ...	Umballa, Feb. 1872 ..	209·8	2·2	4·4
1873 ...	Ditto ditto ...	171·3	1·8	3·5
1874 ...	Ditto ditto ...	176·7	1·9	7·4
	Average	145·26	1·68	4·06
1875 ...	Umballa	98·16	·98	2·71

Medical Officers.

I. Medical Officers.—Surgeon-Major Raddock held charge of the regiment till the 31st March 1875, relieved by Surgeon-Major Adley, 15th Bengal Cavalry, who was again relieved by Surgeon Moynan, M.D., who held charge till the 18th of May, when medical charge was again assumed by Surgeon-Major Raddock, who continued to hold charge till the 9th of September. On the 10th of September, Surgeon Moynan again received officiating charge, and continued to hold it to the end of the year. Surgeon Yeld held medical charge of the detachment at Umballa from the 4th of November to the end of the year.

Location and movements.

II. Location and movements.—From the 1st January 1875 to the 2nd November, the regiment was stationed at Umballa; from the 3rd of November to 31st December, the regiment was absent at the Camp of Exercise, Delhi. A detachment of nearly 200 men remained at Umballa during the absence of the regiment at Delhi.

Topography, &c.

III. Topography, &c.—The topography of this station has been described on former occasions, as well as the meteorology and climate.

Lines and huts.

V. Lines and huts.—The lines occupied by this regiment are situated to the south of the cantonments, and separated from the main portion of them by the railway line and the grand trunk road; the huts are reported on as being in good repair and well ventilated. The drainage is stated to have been efficient. The "trench system" of latrine is in use, but the medical officer does not make any mention of how it worked. The conservancy of the lines is good.

Water-supply.

Water was supplied from a village named Beebial, and from other wells in the Artillery lines; the water from this source is brought to the Native Infantry lines in pucca channels, and the supply is said to be abundant and of good quality. Supplies in the bazaar have been of good quality, and were sold at moderate prices. Vegetables were abundant; the men are said to be well nourished.

Clothing.

X. Clothing.—In summer, white clothing is worn; in the cold weather warm clothing is used; it is quite suitable for the varying climate and duties. Ammunition boots are worn; they are suitable and fit for marching. The clothing is sufficient for the different seasons.

Duty and employment.

XI. Duty and employment.—The duties are not excessive; parades are daily held except on Thursday and Sunday; the parades last one or two hours at the discretion of the officer commanding. The regiment furnishes station guards. Average number of nights in bed for the year, 6·42.

Exercise, &c.

XII. Exercise, &c.—When not on duty the men occupy their time mostly in athletic exercises and shooting.

Marches and service.

XIII. Marches and service.—The regiment marched to Delhi, to the Camp of Exercise, on the 3rd November, a distance of 120 miles; this was completed in 11 marches; the health of the regiment during the march, and subsequent service at Delhi, was very good. A short time after arrival at Delhi, the regiment marched to Bussai, about five miles off, and encamped there for some time. During this time a detachment of nearly 200 men remained behind at Umballa.

Hospital.

XIV. Hospital.—The regimental hospital is situated east of the lines and at some distance from them; it is on a large open plain, and affords ample accommodation: the drainage is efficient; it goes into a large nullah not far off from the hospital. The hospital is a pucka

Digitized by Google

building on the old standard plan; it contains one large and partially divided ward, four verandahs and four small rooms. The length of the hospital is 175 feet, width 45, and the height 20 feet; it contains 57 beds and affords to 57 inmates, 2,763 cubic and 138 superficial feet per man; there are 57 cots, or over 8 per cent. The size of the cots is satisfactory. Ventilation is efficiently carried out; numerous doorways exist, which have good doors. The out-offices are scanty in accommodation; they consist of seven rooms for hospital establishment, two cook-rooms, and one privy; the cooking houses are used as dwellings for the hospital assistants, as no houses for the latter exist here. A cook-room is improvised out of one of the servants' houses. The state of repair of the hospital and out-offices is good; the site is desirable, with the exception that a deep nullah intervenes between it (the hospital) and the lines; in the rains all transit to and from the lines takes place over a wooden bridge; the hospital is also half a mile from the lines. There has been no overcrowding in the hospital, the building is sufficiently warm and well lighted, and the bedding, clothing, &c., is quite suitable. When, in the opinion of the medical officer, a man coming into hospital has not sufficient clothing, a suitable supply is immediately obtained for him through the orderly officer of the day.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	617·33
Absent	94·
Total ...	711·33

Station.	Period		Strength.	Total Number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Umballa and Camp of Exercise at Delhi	1st Jan. 1875	31st Dec. 1875	586	557	3	14·55	95·22	·53	2·50
Detachment at Umballa ...	3rd Nov. 1875	31st Dec. 1875	185	49	...	2·19	63·82	...	1·18
Total ...	...	...	617·3	606	3	16·74	98·16	·48	2·71

Number of deaths in hospital 3; out of hospital 4; total 7; per cent. of total strength		...	0·98
„ invalided	17; „ „	...	2·39
„ sent on sick leave	1; „ „	...	0·14
„ of days spent in hospital 6,016; per admission 9·93; per man of total strength		...	8·46
„ „ on sick leave 120; per man	120; „ „	...	0·16
Total temporary loss of service per man of total strength		...	8·62

XVI. Principal causes of sickness.—Of ague there were 172 admissions— Principal causes of sickness.

Rheumatism, Chronic... ...	53 admissions.
Conjunctivitis ...	62 ditto.
Ulcers ...	56 ditto.
Blistered feet ...	22 ditto.
Dysentery ...	29 ditto.
Debility ...	19 ditto.
Boils ...	22 ditto.
Colic ...	15 ditto.
Otitis ...	10 ditto.

Conjunctivitis was due to natural causes, such as heat, glare of the sun, cold. Blistered feet due in many cases to tight boots or sometimes to loosely fitting ones.

XVII. Causes of mortality.—One death took place from ague, one from pneumonia and one from dysentery. Four men died at their homes while on furlough. Causes of mortality.

XVIII. Epidemics.—Amongst the soldiers there were no epidemics. Nine children of the regiment were seized in July and August with cholera symptoms; they were sent at once to the cholera hospital, near the sudder bazaar, where three died, and the remainder recovered. Cases of cholera occurred at this time in the station among the European troops.

XIX. Vaccination.—There were no vaccinations during the year, but about 200 children were vaccinated in November and December 1874 amongst the families of the men. All, or nearly all, the sepoys have had small-pox at some period of their lives; they are, therefore, well protected. Vaccination.

XX. Recommendations.—At the recommendation of Surgeon-Major Raddock, on the 16th July 1875 young trees were planted near the hospital. On the 3rd August 1875, Surgeon-Major Raddock drew the attention of the officer commanding to the fact that the latrines for the men needed repair. The repair necessary was executed. On the 1st December 1875, Surgeon Moynan recommended to the Principal Medical Officer, Camp Delhi, that a well near the old parade ground, Delhi, should be closed; the well was situated in the immediate vicinity of the graveyard, and Surgeon Moynan considered that the water was unfit for drinking purposes (the well was situated quite close to the camp, 32nd Pioneers). The men were fordidden to use Recommendations. Latrines. Wells at Delhi. Cultivations of ground near the Hospital.

Digitized by Google

the water, and ceased to do so; but as the regiment soon after marched to Bussai, I am unaware whether the well has been permanently closed.

On the 16th July 1875, Surgeon-Major Raddock recommended to the Cantonment Magistrate that the ground within 200 yards of the hospital should not be broken up for cultivation. The recommendation was attended to.

Cutting of grass and grazing of bullocks close to the hospital.

On the 28th September 1875, I recommended to the officer commanding Her Majesty's 32nd Pioneers that grass should not be cut in the immediate vicinity of the hospital, and that bullocks should not be allowed to graze too close to the building, as they both disturbed the patients and seriously damaged the young trees which were planted near the hospital. Orders were issued and the necessary steps taken.

Defects still existing.—The hospital out-office accommodation is very insufficient, as mentioned in previous paragraphs; and, in my opinion, the doorways of the hospital should be supplied with chicks to keep flies out. Steps have been taken towards the building of new out-offices some time ago, but the construction of them has not yet been begun.

Remarks by His Excellency the Commander-in-Chief on the occasion of his inspection of the hospital.

The following remark, with reference to the inadequate accommodation which existed for the treatment of any sick native officer, was written by His Excellency the Commander-in-Chief on the occasion of his inspection of the hospital, *viz.*: "The only room available for the case of any sick native officer is now used as a store-room, for want of a proper building for the purpose. Application through the military station and division authorities should be made for the complete buildings required."

The 12th November 1875. (Sd.) NAPIER OF MAGDALA.

Special remarks and observations.

XXI. Special remarks and observations.—The men are almost all Mushee Sikhs. The recruits that present themselves for examination (physical) are usually strong and well-nourished youths.

Inspection.

This hospital was inspected by the Deputy Surgeon-General of the Umballa Circle on the 25th October 1875. The lines were in good sanitary condition, and the huts were in good order. According to the number then accommodated in the huts, each sepoy had 510 cubic feet and 60 of superficial space; the men appeared to be well nourished, and had their food prepared in messes. The hospital was well fitted for its purpose; its ventilation was efficient, and in it the details for the proper treatment of the sick were satisfactorily attended to.

Lock Hospital, Umballa.

Lock Hospital, Umballa.—Inspected by the Deputy Surgeon-General of the Umballa Circle on the 15th March 1876. Mr. Tresidder considers the building too small to meet the requirements of a lock hospital. The number of registered prostitutes on the day of inspection was 114, of whom 10 were sick in hospital; 7 affected with primary syphilis, and 3 with leucorrhœa. The average number on the register during the past twelve months was 111·80, and from them there was an average number of daily sick of 5·94. The total number of admissions into hospital was 189, *viz.*, from primary syphilis 111, secondary syphilis 6, gonorrhœa 26, leucorrhœa 21, ulcer of the *os uteri* 15, &c., &c.:—

Statistics.

Ratio per cent. of sick to strength	... 8·26
„ „ „ admissions to strength	... 14·08
„ „ „ diseased at each examination	... 4·55

The establishment consists of—

	Rs.
1 Medical Officer	100
1 Hospital Assistant	30
1 Matron	12
1 Bheestie	5
1 Cook	5
1 Mehter	4
1 Mehtranee	5
Total ...	161

During the past 12 months, 38 women had been reported for absenting themselves without leave from examination, and were dealt with by the Magistrate. Rupees 168 had been levied on account of fines. The average strength of the European garrison for the past 12 months was 1,293·50. The total number of admissions into hospital from this strength for venereal diseases was 162, *viz.*, primary syphilis 41, secondary syphilis 15, gonorrhœa 106. The ratio of admissions to average strength has been 12·52; this includes an average for primary and secondary syphilis of 4·33, whilst for the preceding 12 months it was 4·60. Mr. Tresidder considers that this hospital was in good working condition.

Digitized by Google

Station Staff Hospital, Umballa.—Inspected by Mr. Tresidder on the 15th March 1876. He reports that the hospital is still located in the sudder bazaar in a little bungalow, very ill-suited for the purpose, but that plans for a new hospital had been sanctioned, and that the building will soon be commenced. On the day of inspection there were no patients in hospital. During the year, 9 European patients were treated, of whom 1 died; and 56 native in-door patients. Station Staff Hospital, Umballa.

The establishment consists of—

		Rs.
1	Medical Officer	100
1	Hospital Assistant	40
1	Shop cooly	5
1	Native Medical Pupil	5
1	Bheestie	4
1	Cook	4
1	Sweeper	5
	Total ...	163

and lately a vaccinator on Rs. 10 per mensem. Mr. Tresidder considered the hospital in excellent working order.

Hospital for Infectious Diseases, Umballa.—Inspected on the 15th March 1876. Mr. Tresidder reports that this hospital, for the reception of small-pox or cholera cases, is situated on an open plain, about ¼ of a mile south of the sudder bazaar, and consists of a small tiled building suited for a few patients only; but when additional accommodation is required, straw huts in any number can be erected at a few hours' notice on the surrounding plain, which is kept clean for the purpose. On the day of inspection there were 4 patients suffering from small-pox of the "distinct" variety, and they were sent to this hospital from the regimental and sudder bazaar. Hospital for infectious diseases, Umballa.

During the past 12 months, 146 cases of small-pox, 4 of diarrhœa, and 88 cases of cholera were treated in this hospital—total 238. These patients were dieted and provided for out of cantonment funds. The establishment consists of— Small-pox.

		Rs.
1	Native Doctor	20
1	Chowkeedar...	5
1	Bhistie	5
1	Cook	5
1	Mehter	5
1	Mehtranee	6

with coolies when required, 4 dooly-bearers Rs. 20, and chuprasi Rs. 5.

Mr. Tresidder reports that the work of this hospital was thoroughly well done throughout the epidemics of small-pox and cholera. The native patients complained of having to go to this hospital for treatment.

7th Regiment Native Infantry—Jullundur.

Surgeon A. G. Grant, M.B., reports as follows:—

I. Medical Officers.—Surgeon A. G. Grant, M. B., has held medical charge of the regiment during the year; Surgeon-Major Rouse, Civil Surgeon, being in medical charge of the detachment at Ludhiana, and a hospital assistant in charge of the detachment at Phillour. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dacca and Cachar, December 1867, from Allahabad.	138·4	1·4	3·6
1871 ...	Lucknow, January 1871 ...	150·1	1·1	4·1
1872 ...	Jullundur, March 1872 ...	154·8	·7	4·9
1873 ...	Ditto ditto ...	196·	1·7	5·8
1874 ...	Ditto ditto ...	129·1	·42	4·9
	Average	153·68	1·06	4·66
1875 ...	Jullundur	188·77	1·70	5·93

II.—Location and movements. The head-quarters of the regiment was stationed at Jullundur throughout the year; detachments, which were changed every two months, being furnished to the forts of Ludhiana and Phillour. Location and movements.

Digitized by Google

Topography and physical geography.

III. Topography and physical geography.—The Jullundur Doab is situated between the rivers Sutlej and Beas. The station is only about 70 miles distant from the lower ranges of the Himalayas—latitude 31°19′, longitude 75°31′, altitude 970. The district is, as a rule, sandy; beds of clay are found underlying the sand at varying distances, and in some places reaching the surface.

Inundation.

Inundation.—The river Beas which rises in the higher hills on the north-east flows in a south-westerly direction bounding the Jullundur Doab on the north-west. When the rains are unusually heavy in the hills, the Beas overflows its banks and floods the flat country in the vicinity. It would appear that when this occurred before the railway embankment was made, the water found its way into the West Beyur, a loop of the Beas, and into the numerous nullahs to the west of Kurtarpore, which carried the water back into the Beas. Since the existence of the railway, however, the water has not been able to find its way into the old channels, and last year (as in 1872), when the rains were very heavy, the water was brought along the north side of the railway embankment as far as Kurtarpore and Jullundur, inundating a great portion of the country. The Railway Company has been engaged in making a large number of new culverts along the line between Kurtarpore and the river Beas to enable the water to flow southwards into the old channels. A very full report of the topography, &c., of Jullundur was given by Dr. Verchere in the annual report of the 13th Native Infantry for 1869.

Meteorology and climate.

IV. Meteorology and climate.—The highest temperature in the hospital was 99° in June, the lowest 48° in January. The total rainfall during the year was 44·1; 21·4 inches having fallen in September, when a large portion of the station became inundated. There were 108 admissions from ague during the following month, and about half that number during November.

Lines, barracks or huts.

V. Lines, barracks or huts.—The lines have been fully described in former reports. No change has taken place. Roof ventilation of the barracks was recommended again last year, but has not yet been provided.

Drainage.

VI. Drainage.—The drainage has also been fully described; it is satisfactory. The drains are kept in good order.

Conservancy and latrines.

VII. Conservancy and latrines.—No change has taken place in the conservancy arrangements, which are satisfactory. New pucka latrines, male and female, have been lately built, the trench system having been considered by the cantonment committee unsuitable here owing to the sandy nature of the soil.

Water-supply.

VIII. Water-supply.—Water is obtained from pucka wells in the lines, and is plentiful and good. The washing of clothes is done beyond the regimental lines.

Diet.

IX. Diet.—As a rule, the men obtain their food from the regimental bazaar. The supplies, which are good and plentiful and include meat, are frequently inspected by the medical officer, quartermaster, &c.

Clothing.

X. Clothing.—The clothing is suitable for the season and duty performed.

Duty and employment.

XI. Duty and employment.—The ordinary duties, parades, guards and orderlies, have been light throughout the year. The average number of nights in bed has been about 10 to 1 on duty.

Exercise, &c.

XII. Exercise, amusements and occupation.—The sepoys are allowed to amuse themselves in the lines when they have time and feel so disposed. A few men are always to be found who are fond of wrestling. They have no gardens here.

Marches and service.

XIII. Marches and service.—No marches or service have taken place during the year.

Hospital.

XIV. Hospital.—The hospital has been fully described in former reports. A partition wall has been lately built, dividing off quarter of the hospital, making a large and small compartment with a fire-place in each side. Purdahs for the inner openings have also been supplied. The hospital is in excellent condition.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	633·04
Absent	...	...	...	70·64
Total			...	703·68

Stations.	Period		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Jullundur	1st Jan. 1875	31st Dec. 1875	485·32	900	7	29·85	185·44	1·44	6·15
Detachment at Ludhiana ...	Ditto	Ditto	107·86	194	1	5·42	179·86	·92	5·02
Ditto at Phillour ...	Ditto	Ditto	39·86	101	...	2·31	253·38	...	5·79
Total ...	...	...	633·04	1,195	8	37·58	188·77	1·26	5·93

Number of deaths in hospital 8; out of hospital 4; total 12; per cent. of total strength			... 1·70
„ invalided...	27;	„ „	... 3·83
„ sent on sick leave	14;	„ „	... 1·98
„ of days spent in hospital 13,660; per admission 11·43; per man of total strength			... 19·41
„ „ „ on sick leave 2,220; per man 158·57;		„ „	... 3·15
Total temporary loss of service per man of total strength			... 22·56

Digitized by Google

XVI. Principal causes of sickness.—The principal causes of sickness have been fevers rheumatism, boils, and blisters of the feet. The increase in the number of admissions during 1875 as compared with the previous year was chiefly owing to the large number of admissions which took place during September, October and November on account of fever. Principal causes of sickness.

XVII. Principal causes of mortality.—Four deaths were the result of fevers; one of bronchitis, one of pneumonia, one of general debility, and the remaining one was due to fracture and dislocation of the spine. The four deaths out of hospital were reported to be chiefly from fever and dysentery. Principal causes of mortality.

XVIII. Epidemics.—No epidemic disease occurred in the regiment, either at head-quarters or in the detachments, during the year. Epidemics.

XIX. Vaccination.—Seven cases were vaccinated during the year successfully. The regiment is well protected from small-pox; the great majority of the men having either been vaccinated or had the disease. Vaccination.

XX. Recommendations.—Ridge-roof ventilation for the barracks has been recommended, but owing to the want of sufficient funds, it was found impracticable to carry out the recommendation. The advisability of having ventilating openings in the barracks has been represented in former reports, but as yet no action has been taken to supply them. Recommendations.

Inspected by the Deputy Surgeon-General of the Umballa Circle on the 26th of November 1875. Mr. Tresidder reports that the lines of this regiment occupy an open and well-drained site; the ventilation of the barracks is dependent on the doors altogether, and there are enclosed verandahs on each side of the barracks which are used for cooking purposes. Each sepoy has 517 cubic feet of breathing space, and the small amount of 44 square feet of ground room. Inspection.

The trench system of latrine had not been introduced into the regiment owing to the unsuitableness of the soil, but new latrines were being built in place of the former kutcha ones which were destroyed by the rain. The night-soil is removed from the latrines and buried in trenches, the land being afterwards brought into cultivation. Latrines.

The hospital can accommodate 78 patients, allowing each 903 cubic feet and 50 square feet of superficial area; it is supplied with purdahs and fires during the cold weather; and the lighting and ventilation are sufficient. Mr. Tresidder considers that a dead-house might be built, and that trees should be planted round the hospital. He also remarks that "the general physique of this regiment is excellent; the men are large, active, and well-developed, and fit for any work that native infantry can be put to." Hospital.

LAHORE DIVISION.

(INCLUDING THE STATIONS OF MEEAN MEER, FEROZEPORE, MOOLTAN, DHARMSALA AND BAKLOH.)

Average strength present during the year	...	Cavalry	...	740·11	Infantry ...	3,739·48
Average daily sick per cent. of average strength	...	„	...	4·80	„ ...	4·49
Ratio of mortality per cent. of average strength	...	„	...	1·20	„ ...	2·24

11th Bengal Cavalry (Lancers)—Meean Meer.

I. Medical Officers.—Surgeon Woodforde Finden was in medical charge of the regiment, and submitted the annual sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Allahabad, Dec. 1868, from Umballa.	89·2	1·	3·2
1871 ...	Ditto ditto ...	60	1·5	2·3
1872 ...	Meean Meer, October 1872	62·5	·8	1·5
1873 ...	Ditto ditto ...	228·8	·4	5·4
1874 ..	Meean Meer ...	99·1	1·5	2·8
	Average	107·92	1·04	3·04
1875 ...	Meean Meer ...	160·59	1·09	4·19

II. Location and movements.—The regiment was quartered at Meean Meer until the 1st November, when it marched to the Delhi Camp of Exercise, arriving there on 2nd December. A detachment of one native officer and twenty-four men, relieved every three months, was stationed at Ferozpore. Location and movements.

III. Topography and physical geography.—Has been described fully in former reports. Topography.

IV. Meteorology and climate.—The only thing worthy of note on this subject was the very unusual heavy rainfall, causing Meteorology and climate.

Digitized by Google

the surrounding country to be flooded and considerable damage to the men's lines; but no ill-effects have been noticeable from it.

Lines, barracks or huts.

V. Lines, barracks or huts.—The alterations and repairs of the lines carried out by the 11th Bengal Lancers were fully explained in last year's report. Trees have been planted, and, if only looked after, will very soon be large enough to give shade to both men and horses.

Drainage.

VI. Drainage.—Is decidedly defective, partly from the flatness of the surrounding country, but principally from the non-porous nature of the soil.

Conservancy and latrines.

VII. Conservancy and latrines.—The system described in the report for 1873 has been kept strictly in force, with the exceptions before mentioned; it is all that can be desired.

Water-supply.

VIII. Water-supply.—Has been fully reported upon in former reports. My recommendation to the officer commanding to let the canal water into the wells in the lines occasionally was not carried out. I feel sure that, had a fair trial of my plan been made, some decided benefit would have been the result.

Diet.

IX. Diet.—No special remarks are necessary regarding the subject of diet, clothing, duty and employment, and amusements; those made in last year's report will again be applicable for 1875.

Marches and service.

XIII. Marches and service.—The regiment proceeded on its march to join the Camp of Exercise on the 1st November, arriving at Delhi on 2nd December, where it remained until the end of the year. The men were very sickly before they left Meean Meer, but picked up strength on the march.

Hospital.

XIV. Hospital.—Was described minutely in previous reports.

Sickness, Mortality and Invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	368
Absent	91
Total ...	459

Station.	Period		Strength.	Total Number of		Daily average number of sick.	Per cent of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Meean Meer and Camp of Exercise at Delhi	1st Jany. 1875	31st Dec. 1875	332	567	3	14·69	170·78	·90	4·42
Head-quarters at Ferozepore	Ditto ditto ...	Ditto ditto ...	23	1	...	...	4·35	...	...
Ditto at Meean Meer ...	1st Nov. 1875	Ditto ditto ...	72	23	...	·75	191·11	...	1·04
Total ...	...	...	368	591	3	15·44	160·59	·81	4·19

Number of deaths in hospital 3; out of hospital 2; total	5;	per cent of total strength	...	1·09
„ invalided	13;	„ „	...	2·83
„ sent on sick leave	9;	„ „	...	1·96
„ of days spent in hospital 5,636;	per admission 15·3;	per man of total strength	...	12·27
„ „ on sick leave 954;	per man ... 106;	„ „	...	2·08
Total temporary loss of service per man of total strength			...	14·35

Principal causes of sickness.

XVI. Principal causes of sickness.—Intermittent fevers are stated to have been the principal causes of sickness, and of the three deaths in hospital, two were from remittent fever, and one from bronchitis. The regiment fortunately escaped any epidemic. Twenty children were vaccinated during the year, and the majority of the men are stated to have been vaccinated. No recommendations of an extraordinary nature were made during the year.

Vaccination.

Special observations and remarks.

XXI. Special observations and remarks.—No cases of interest worthy of reporting fully have occurred since last report. The regiment is now on its way to Nowshera after three years' service in Meean Meer, during which period it fell from being almost the healthiest regiment in the service to almost the most unhealthy, purely from intermittent fevers of a type resembling very much Peshawar fever. The men have improved in health and strength very much during the six weeks they were camped at Delhi.

Digitized by Google

25th (Panjab) Regiment Native Infantry—Meean Meer.

I. Medical Officers.—Surgeon-Major F. H. O'Donel held charge of the regiment up to the 1st of May, when he was relieved by Surgeon H. K. McKay, who was in charge for the remainder of the year. The latter officer submits the annual sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Peshawar, January 1868, from Delhi ...	211·6	5·1	5·4
1871 ...	Rawal Pindi, Nov. 1870	83·6	4·1	3·6
1872 ...	Ditto.	52·7	1·8	4·
1873 ...	Ditto.	77·8	1·3	2·1
1874 ...	Meean Meer, Feb. 1874	139·1	·8	3·9
	Average ...	112·96	2·50	5·80
1875 ...	Meean Meer ...	165·99	1·70	3·63

II. Location and movement.—The head-quarters have remained at Meean Meer during the year. A detachment of three companies have been stationed at Amritsar since the 26th February. They ought to have been relieved after six months' absence, but the relieving regiment (26th Punjab Native Infantry) was ordered to the Camp of Exercise, Delhi. A detachment of 48 men was sent every 15 days to Fort Lahore, when the other native infantry regiment is in the station; it is only on alternate 15 days. Three men returned from the Duffla Expedition in March, and 6 from the Naga Expedition in April. Location and movement.

III. Topography and physical geography.—This has been recorded at page 140, Vol. for 1873, of the Bengal Medical Reports. No new channels or drains have been made; the trees round and in the lines which were planted last year are growing, and improve the look of the desolate-looking mud huts. Topography and physical geography.

IV. Meteorology and climate.—The climate this year has been characterized by an excessive amount of rain, which rendered the station extremely unhealthy during the months of October, November, and the early part of December. Meteorology and climate.

V. Lines, barracks and huts.—The lines are stated to have been in very good order, and free from overcrowding; the natural drainage is defective, and as a consequence of this and an unusually heavy rainfall, the water remained on the ground for a considerable time, and, in the opinion of the medical officer, caused much sickness. The "dry earth" system was employed in the latrines. During the past year a small urinal was built in the middle of the lines. The remarks in last year's report regarding the water-supply will again apply to 1875, as will also those made on the subjects of diet and clothing. During the absence of the 26th Regiment (Punjab) Native Infantry at the Camp of Exercise, the duty is said to have been great, reducing the number of nights in bed as low as 2·9 per man; the average number of nights in bed for the year was 6·2. Lines, barracks and huts. Conservancy. Water-supply. Duty.

XIV. Hospital.—This has been described at page 193 of Vol. for 1870 of the Bengal Army Medical Reports. The roof has been repaired, and the inside has been whitewashed thrice, and the outside once, since May 1875. The hospital is supplied with 60 cots, which is sufficient, except on exceptional occasions, as in November, when the number of men in hospital was 61, besides the sick of the detachment of the 11th Bengal Lancers, who are admitted into the 25th Punjab Native Infantry Hospital. Twenty-six large, thick purdahs have been supplied, corresponding to the number of arches in the building, which add greatly to the comfort of the patients. The hospitals in Meean Meer are now allowed from the 1st November one maund of firewood a day per each fire-place. This was greatly needed on account of the intense cold of the nights and mornings. Before the issue of firewood, men used to be admitted with simple fever and be delayed in hospital on account of rheumatism or some Bronchial affection. Now these last two diseases are exceptions as will be seen. During the months of November and December 1874, the number of men in hospital suffering from bronchial catarrh and rheumatism was 23, whilst in the corresponding months in 1875 there were only three. One lamp is allowed to each ward. The men bring their own bedding on admission. Hospital. Issue of firewood.

XV. Sickness, mortality and invaliding.—Strength of regiment— Sickness, mortality and invaliding.

Present	... 619·91
Absent	... 84·84
Total	... 704·75

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Meean Meer.	1st Nov. ...	31st Dec. ...	530·86	765	5	17·1	144·1	·91	3·22
Detachment at Amritsar ...	26th Feb. ...	Ditto ...	173·89	264	4	5·4	179·9	2·7	3·1
Total ...			619·91	1,029	9	22 5	165·99	1·45	3·63

Number of deaths in hospital 9; out of hospital 3; total 12; per cent. of total strength ...	...	1·70
„ invalided ... ... 13; „ „ ...	...	1·8
„ sent on sick leave ... ... 14; „ „ ...	...	1·9
„ of days spent in hospital 8,295; per admission 8·06; per man of „ ...	...	11·7
„ on sick leave 1,490; per man 106·4; „ „ ...	...	2·1
Total temporary loss of service per man of total strength ...	...	13·8

Compared with 1874, the sickness has greatly increased; 1,029 admissions in 1875, to 810 in 1874; deaths 12 in 1875, to 2 in 1874; invaliding 13 in 1875, to 15 in 1874.

Principal causes of mortality.

XVII. Principal causes of mortality.—There was a great increase of deaths this year. I cannot attribute it to any particular cause—

2 deaths were due to dysentery.
1 death was „ diarrhœa.
4 deaths were „ fever and its sequelæ.
2 „ „ cholera at Amritsar.
2 „ „ chest affections.

XVIII. Cholera prevailed in and around Amritsar, only 3 men of the detachment were attacked with the disease; of these 2 died.

Recommendations.

XX. Recommendations.—The hospital latrine is still the same. It has been re-roofed, which looks as if the authorities did not mean to build another yet.

Inspection.

This regiment was inspected by the Deputy Surgeon-General of the Lahore Circle on the 14th March 1876. Dr. Ray states that the defective drainage remains unremedied; the duties were very heavy during the past year, and consisted principally of constant escort duty with stores; and the medical officer attributed most of the sickness of the regiment to this cause. Fire-places had been constructed in the hospital, and purdahs had been also supplied with great benefit to the sick, as there were but few cases of pneumonia since the introduction of these very necessary additions. The state of the hospital was in every way satisfactory,—the bath-room was fitted up according to regulation, but was never used by the men.

26th (Panjab) Regiment, Native Infantry—Meean Meer.

Medical Officers.

I. Medical Officers.—The annual report was prepared and submitted by Surgeon-Major H. Cookson. He reports that the following medical officers held charge of the regiment, *viz.*:—

Surgeon-Major Waghorn, 1st January to 29th April; Surgeon Warden, 30th April to 29th October, and Surgeon-Major Waghorn, 1st November to 31st December.

Year.	Station.	Per cent of Strength. Admissions.	Deaths.	Daily sick.
1870 ...	Umballa, June 1869, from Mehidpore and Augur	166·	·8	6·7
1871 ...	Ditto Ditto ...	137·2	1·8	5·3
1872 ...	Peshawar, Nov. 1871 ...	225·8	2·2	3·4
1873 ...	Ditto Ditto ...	186·	3·1	2·7
1874 ...	Meean Meer, Nov. 1874	212·2	1·8	3·8
	Average ...	185·44	1·94	4·38
1875 ...	Meean Meer ...	220·28	3·29	5·10

Quarters.

Quarters, &c.—Meean Meer, the head-quarters of the corps, with its stunted trees, its white roads, its heat and clouds of dust, requires no further description. The small canal cut has somewhat lessened the dreariness of the place by allowing a little gardening to be done.

Digitized by Google

The bed of *kunkur*, which interferes with the sub-soil drainage, is usually considered to be the main cause of the excessive unhealthiness of Meean Meer. Extensive drains are now being made in the European lines through the *kunkur*; it remains to be seen whether they will effect the object they are being made for.

The regiment marched for the Camp of Exercise at Delhi early in November, and arrived there on the 6th December, remaining until the end of the year. The huts at Meean Meer are stated to have been badly ventilated; the drainage is said to be imperfect; the water-supply was from wells, but was disliked by the men, being brackish; the supply of food was abundant.

XII. Exercise and amusement.—The men have no amusements; a sickly *pepul* tree or a blighted pumpkin limits the mens' attempt at gardening. Exercise and amusement.

XIII. Marches, &c.—I have no data from which to describe the transactions at the Camp of Exercise, to which about 500 rank and file went on 3rd November. Marches, &c.

XIV. Hospital.—The hospital is very good, and when the out-offices, lately sanctioned, and a more commodious and better-situated latrine, also sanctioned, are finished, there will be little to desire for the treatment of the sick, so far as buildings are concerned. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	624·68
Absent	...	...	...	...	73·98
			Total	...	698·66

Station.	Period		Strength.	Total Number of		Daily average number of sick.	Per cent of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Meean Meer	1st January ...	2nd November	565·93	1,080	16	24·43	236·00	3·34	4·31
Ditto at Camp of Exercise	3rd November	31st December	511·46	153	2	21·12	188·26	2·46	4·19
Detachment at Amritsar ...	1st January ...	2nd March ...	196·15	15	1	1·94	46·52	3·10	0·98
Detachment at Meean Meer, mostly sick and weakly men	3rd November	31st December	186·24	128	...	21·77	432·57	...	11·61
Total ...	...	...	624·88	1,376	19	32·22	220·28	3·04	5·10

Number of deaths in hospital 19; out of hospital 4; total 23; per cent. of total strength				... 3·29
„ invalided	32;	„	„	... 4·58
„ sent on sick leave	47;	„	„	... 6·72
„ of days spent in hospital 11,760; per admission 8·54; per man of total strength				... 16·83
„ „ on sick leave 5,170; per man 110;		„	„	... 7·39
Total temporary loss of service per man of total strength				... 24·22

XX. Recommendations.—I do not find that any recommendation was made during the year, except to lessen the men's duties as much as possible, which was done. Recommendations.

XXI. Special observations.—I observe that, commenting upon the jail return of 1874, the Lieutenant-Governor of the Punjab observes that the health of the prisoners is as good as that of native troops serving in the Punjab; there must certainly be something very wrong in the hygiene of the native army when this is the case. This regiment has a fearfully high death, sick and invaliding rate for the past year; a very large number of the men are anæmic, weakly and dispirited, and there are many with enlarged spleens, and not a few in whom the seeds of phthisis have been sown. I am persuaded that much of the sickness of the native army is due to two cases, both remediable, *viz.*, first, that the men do not get enough to eat; second, that they are overcrowded in ill-ventilated barracks to an extent quite incompitable with health. Special observations.

Dr. G. H. Ray made his inspection of this regiment on the 16th March 1876. The lines are described as being very bare and dreary, and they suffered a good deal from the severe rains in 1875; the ventilation of the huts is said to be defective. Some of the men obtain their drinking water from a branch of the canal which runs near the lines, and apparently with benefit. The latrine which was in use when the last inspection was made was washed down by the heavy rains of 1875, and a new one has been put up, about 400 yards to the front beyond the parade ground. Fire-places have been constructed in the hospital, and purdahs have been supplied, and the benefit resulting from these most important and necessary aids in the proper treatment of the sick has been great. All the details in hospital for the comfort and proper care of the sick were considered quite satisfactory. Inspection.

Digitized by Google

13th Bengal Cavalry (Lancers)—Mooltan.

Medical Officers.

I. Medical Officers.—Surgeon C. H. J. Warden supplies the annual sanitary report, and writes as follows:—

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Lucknow, March 1868, from Peshawar ...	149·8	1·7	3·4
1871 ...	Ditto	89·8	·2	3·1
1872 ...	Mooltan, Oct. 1872 ...	123·6	1·1	3·2
1873 ...	Ditto	237·2	1·	7·4
1874 ...	Mooltan	248·	1·09	7·6
	Average ...	167·68	1·02	4·94
1875 ...	Mooltan	173·30	1·31	5·30

The following medical officers have done duty with the regiment during the year:—

Surgeon-Major G. H. Daly from 1st January to 6th August; Surgeon S. G. Skardon from 7th August to 4th October; Surgeon S. Lyons, A. M. D., from 5th October to 31st October; Surgeon C. J. H. Warden, from 1st November to 31st December.

Location and movements.

II. Location and movements.—The regiment has been stationed at Mooltan throughout the year.

Topography.

III. Topography.—The topography of this station has been described in former reports.

Meteorology and climate.

IV. Meteorology and climate.—There has been nothing exceptional about the climate of Mooltan during the past year. The approximate mean temperature of air in shade ranged from 102° Fah. in June to 55° in January. The maximum temperature recorded was 114° in June, and the minimum 39° in January. The mean of highest temperature during the year was 96°; of lowest 65°; mean for the year 80·5. Rain fell on 29 days, but no register of the amount has been kept. The general direction of the wind was south.

Lines, huts, &c.

V. Lines, huts, &c.—The lines are in a fair state of repair. There is no overcrowding. Each man is allowed 121 square feet superficial area, and 847 cubic space.

Drainage.

VI. Drainage.—As I was not in medical charge of the regiment during the rainy season, I am unable to give any information on the drainage of the station. I have been told that after a heavy fall of rain the lines are swamped, and the water being unable to run off, stagnates and becomes in a short time highly offensive; from the level nature of the ground this can readily be imagined.

Conservancy and latrines.

VII. Conservancy and latrines.—There are three latrines in use,—a large one to the east of the lines, a small one for the quarter-guard, and the usual hospital latrine. The hospital latrine and a few compartments of the large latrine are furnished with pans containing dry earth, but the quarter-guard latrine is not supplied with any. Only a small number of men appear to use the large latrine; the majority prefer going into the jungle for the purposes of nature. It is stated in the annual sanitary report of the regiment for 1873, that "it has been decided to build a second latrine for the convenience of those occupying the west side of the lines." This has not been done, and taking into consideration the small number of men who use the latrine to the east of the lines, it is questionable, I think, if a second latrine to the west of the lines is really necessary. The quarter-guard latrine is between two wells; it might without any inconvenience be done away with, and the men on duty at the quarter-guard allowed to use the hospital latrine, which is within a short distance.

The offensive smell from some latrines is doubtless due to the contamination of their mud floors from the soakage of urine, &c. The oxidizing power of the soil being limited, if latrines are used daily, their floors must ultimately become saturated with organic matter in a state of decomposition. Carbolic acid veils, but does not remove, the stink from a foul latrine, and besides, the supply of acid is not sufficient for daily use in all the latrines. Replacing the contaminated flooring with fresh soil naturally suggests itself as a remedy, and this plan could readily be adopted if latrine floors were either cemented or paved with glazed tiles. On such an impermeable flooring, a layer of earth, a few inches in depth, might be placed, and could easily be removed when necessary. Cantonments have been kept in a good sanitary condition during the year.

Water-supply.

VIII. Water-supply—The following is an analysis of a sample of water-taken from a well near the lines:—

Physical character.	Chlorine.	Nitric acid.	Nitrous acid.	Dissolved solids.
Slightly turbid, otherwise clear on standing.	Trace ...	Slight trace ...	...	10·24 grains per gallon; on ignition no blackening, and very trifling loss in weight.

The above rough analysis shews the water to be of a very fair degree of purity. The water having been raised by a pump, the sediment at the bottom of the well was probably disturbed, and hence the slight turbidity. The small amount of nitric acid present in the water is rather surprising, especially as the soil of Mooltan is asserted to contain a large amount of "nitre." In certain localities, a snow-white effloresence can be seen on the ground, and this

Digitized by Google

is supposed to be nitrate of potash. Examination of some earth covered with the above-mentioned incrustation gave the following results:—

Salts soluble in water—6·3 per cent. of air-dried mud.	Chlorine—considerable amount.	Nitric acid—moderately large amount; slight traces of nitrous acid.

Other salts were also present, but the want of re-agents and apparatus prevented me from making a complete quantitative analysis. It would be interesting to examine the well waters of the district shortly after a heavy fall of rain.

IX. Diet.—The regimental bazaar has been well supplied with articles of diet of a good quality, and I have been informed that, as a rule, vegetables have been easily procurable. During a period of three years, nine cases of scurvy are recorded as having been treated in hospital, *viz.*, in 1873, one; 1874, six; and last year, two. Diet.

A sowar under six years' service receives Rs. 28 a month, after ten years, 29, and after fifteen years, Rs. 30. The bazaar has been weekly inspected by the medical officer, and all articles of diet carefully examined. I have been with the regiment about three months, and I have not seen any case of disease which could be attributed to the practice of under-feeding.

X. Clothing.—The same as in previous reports. Clothing.

XI. Duty and employment.—Have been as usual in cavalry regiments. The nights in bed averaged 6 to 7. Duty and employment.

XII. Amusements.—Once a fortnight the station residents are invited to witness the performance of the men at tent-pegging, jumping, &c. The men appear to take great interest in these sports. Amusements.

XIII. Marches.—None have been made during the year. Marches.

XIV. Hospital.—The hospital was described by Dr. Watson in his report for 1871. In November, it was necessary to pitch a tent to accommodate the fever cases: 84 were treated during the month. In the winter months the hospital is very cold, and the quantity of fuel supplied by the Commissariat Department is hardly sufficient to warm it thoroughly. To economize fuel as much as possible, orders have been given to light the fires only in the early morning and after sunset. With all the doors closed and one fire burning, I found the temperature of the ward 56·2° Fah., while the thermometer in the verandah registered 54°. The want of accommodation for the native hospital staff has been noticed in every annual report for the last three years, but without any result. The native doctor lives in the hospital cook-house, and his assistant is lodged in the lines. Hospital.

The cook-house being occupied, patients are obliged to cook their food in the lines, and thus a great deal of unnecessary intercourse takes place between the men under treatment and the rest of the regiment. I have tried to make the men understand that, as long as their names are borne on the hospital books, they have nothing to do with the rest of the regiment. But in a cavalry corps this system cannot be strictly enforced, because a sowar, unless he is seriously ill, is obliged to attend to his horse. Cook-house.

The only men who shirk their work are those who have nearly served the time which they imagine entitles them to a pension. Such men when admitted into hospital do their best to remain in it as long as possible. Their symptoms are, as a rule, subjective; and the medical officer, although he may be convinced that they are healthy, is still unable to certify to that fact.

The men who are "working up for pensions" are known both to the officers and to the men. These malingerers are utterly useless to the service, and when brought before invaliding committees, are not passed, for the simple reason that no appreciable disease can be detected; they are consequently returned to their regiment as "fit for further service." I believe that this system of malingering would be checked if "hospital stoppages" could be enforced on the recommendation of the medical officer. Malingerers.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	372·11
Absent	83·95
Total ...	456·06

Digitized by Google

Station.	Period		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Mooltan	1st Jany. 1875	31st Dec. 1875	372·11	645	5	20·12	173·3	1·34	5·3

Number of deaths in hospital 5; out of hospital 1; total 6; per cent. of total strength			...	1·31
„ invalided ... ... 18; „ „			...	3·95
„ sent on sick leave ... ... 8; „ „			...	1·75
„ of days spent in hospital 7,344; per admission 11·38; per man of total strength			...	16·10
„ „ on sick leave 938; per man 117·25; „ „			...	2·05
	Total temporary loss of service per man of total strength		...	18·15

Principal causes of sickness.

XVI. Principal causes of sickness.—The following total gives the principal causes of disease for the last two years :—

Station.	General diseases.							Eye.		Respiratory.				Digestive.				Urinary.		Cutaneous.		Local Injuries			
Mooltan.	Ague.	Rheumatism, acute.	Rheumatism, muscular.	Syphilis.	Syphilis, secondary.	Phthisis.	Others.	Conjunctivitis.	Others.	Bronchial Catarrh.	Bronchitis.	Pneumonia.	Others.	Dysentery.	Diarrhœa.	Splenitis.	Others.	Gonorrhœa.	Others.	Boils.	Others.	Fracture.	Horse-bite.	Others.	All others.
1873	678	1	5	3	1	...	5	27	4	14	3	1	1	19	5	3	18	2	8	9	30	1	1	53	30
1874	636	...	9	5	1	...	13	29	8	22	2	7	1	15	3	6	17	4	6	38	21	2	10	69	14
1875	313	6	21	4	6	1	6	25	3	23	1	11	2	15	3	6	24	4	3	37	21	4	3	32	11

The marked diminution in the number of fever cases treated during the last year is very striking, only 313 cases having been admitted into hospital; whereas in 1873, 678, and in 1874, 636 men, were affected with ague.

Fever.

The question arises,—how is this diminution of fever cases in 1875 to be accounted for? Is it to be attributed to the so-called "malarial emanations" having been less potent in 1875? Or have the men become inured to the effects of the malarial poison by repeated attacks of ague? Surgeon J. S. Gunn, in his report for 1873, attaches great importance to the variation of temperature as a cause of fever; but there were the same variations in temperature in 1875, and yet only 313 men were affected with ague. It appears to me impossible not to believe in the existence of a poison, the product of the decomposition of vegetable matter, which, when introduced into the system, produces a series of changes which culminate in an attack of ague.

Causation.

It is well known that enteric fever can be caused either by the effluvia from foul drains, or by the contamination of drinking water by decomposing sewage. In typhoid fever there are certain well-marked intestinal lesions which characterize the disease, and, although no special pathological lesions have been discovered as peculiar to intermittent fever, yet it does not follow that they do not exist, for the alterations in Peyer's patches, which are characteristic of typhoid fever, were for a long time overlooked.

Treatment.

A mixture containing arsenic, quinine and cinchona was given to the men daily during the time fevers were prevalent. I think a combination of the above-mentioned drugs acts more powerfully as a prophylactic than simple quinine.

Venereal diseases.

Venereal diseases—gave 14 admissions, equal to 3·0 per cent. of the total strength. I do not believe that the above figures shew the total amount of disease, as probably several men never apply to the medical officer, but are treated in the bazaars.

Opium-eating.

The practice of opium-eating appears to be rather common in the regiment: 38 men acknowledge to eating the drug,—Mahomedans 10, Hindoos 28. The habit ought to be discouraged as much as possible, and stringent restrictions placed on the sale of the drug in the bazaars. Opium, I am told, cannot be obtained in the regimental bazaar.

Principal causes of mortality.

XVII. Principal causes of mortality.—Six men died during the year, five in hospital, and one while on sick leave. The following table shews the principal causes of mortality for the last three years :—

	Ague.	Remittent fever.	Pneumonia.	Phthisis.	Pyæmia.	Erysipelas.	Hepatitis.	Inflammation of muscles.
1873	2	...	1	...	...	1	1	...
1874	...	1	3	...	...	...	...	1
1875	...	1	3	1	1	...	...	...

Digitized by Google

XVIII. Epidemics.—No epidemic in the regiment. Epidemics.

XIX. Vaccination.—No vaccination has been performed during the year. Vaccination.

XX. Recommendations.—Pneumonia, when occurring in natives, appears to be somewhat different in type from the pneumonia cases I have been accustomed to see in England. Within the last eight months I have had opportunities of seeing several cases of this most fatal form of lung disease. The following notes that I have made on the subject may, therefore, be of some trifling interest. The premonitory indications of lung mischief are apparently disregarded by natives, and a man does not apply for relief until the disease is far advanced, hence, when he is admitted into hospital, treatment is of little avail, and the disorder terminates fatally in a few days. As an indication of the commencement of grave lung disease, I have noticed the alternate contraction and dilatation of the alœ nosi muscles to be a most valuable sign; and hours before an auscultatory examination will give any information, the working of these small muscles will point out that danger is to be apprehended. I have not often seen the "rust-coloured sputa" in the pneumonia of natives; the expectoration has been frothy and mixed with florid blood; occasionally the expectoration has been scanty and apparently free from blood, and at other times even absent. I believe that most of the fatal cases of pneumonia are complicated with bronchitis, the bronchial inflammation being secondary to the pneumonia consolidation, but I have no opportunity of verifying this assertion by post-mortem examinations. Recommendations. Pneumonia.

Recruiting—Thirty-one men were enlisted during the year— Recruiting.

Average of	Chest.	Height.	Age.
	Inches.	Feet.	Year.
6 Rajpoots	34·3	5.6	20·5
11 Pathans	33·8	5·6	20·9
14 Mussulmans	33·5	5·4	20·7

Inspected on the 10th February 1876 by Dr. G. H. Ray, who reports that the latrines were little used owing to the men preferring to resort to the jungle for necessary purposes. Fire-places had been constructed in the hospital since the previous inspection, and Dr. Ray states that the medical officer complained that his indents for fire-wood had been invariably reduced in the Commissariat Office. Accommodation for the hospital subordinates establishment was still required. The hospital equipment was complete and in accordance with regulations; the bath-room was not used by the patients in hospital. The supply of medicines was ample, and the instruments were kept in a satisfactory state of efficiency. Inspection.

31st (Punjab) Regiment, Native Infantry,—Mooltan.

I. Medical Officer.—Surgeon-Major T. G. Skardon, by whom the Annual Sanitary Report has been submitted, was in medical charge during the whole year, except when on privilege leave—April to June. Medical Officer.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Nowshera	237·	2·3	5·8
1871 ...	Mooltan, October 1871 ...	118·5	1·4	3·6
1872 ...	Ditto ditto ...	223·2	·4	7·4
1873 ...	Ditto ditto ...	152·2	1·7	4·7
1874 ...	Ditto ditto ...	198·4	·86	5·1
	Average	185·86	1·32	5·32
1875 ...	Mooltan	139·78	1·41	3·45

II. Location and movements.— The regiment continued to occupy the same quarters described in former reports until 20th October, when it commenced its march towards the Camp of Exercise, Delhi, and to Cawnpore, the station to which it was ordered in relief on 6th December. The entire regiment arrived at the Cabul Gate camping ground, Delhi, and on the following morning the depôt, 135 strong, with the entire sick of the regiment (18), commenced its march towards Cawnpore. The head-quarters of the regiment, 553 strong, proceeded afterwards, on same morning, and took up its position in 1st Brigade, 4th Division of Camp of Exercise, in the vicinity of Sufdar Jung's tomb near Delhi. Here the head-quarters remained under canvas and encamped in a ploughed field (with young crops just above ground, but not irrigated) until the end of the year. Location and movements.

III. Topography, &c.—Mr. Skardon gives a very full description of the march of the regiment from Mooltan to the Camp of Exercise at Delhi. The regiment marched from Mooltan on the 20th October, and on the 7th December Topography, &c.

Digitized by Google

went into camp not far from Sufdar Jung's tomb. The country passed through from Mooltan as far as Gunda Singwulla appears to have been a barren and desolate tract, and bore marks of recent inundation in some places; a detour was made in order to avoid going through Ferozepore, where there had been a few cases of cholera.

Climate. *IV. Climate.*—The meteorological table in the annual return shows that the temperature at Mooltan this year, from 1st January to 20th October (when regiment marched), was not so high as it has been in former years; but owing to the usual scarcity of rain during the first eight months, it was felt intensely by the European community. The lowest temperature noted in regimental hospital at Mooltan was 42° on 2nd February at 6 A.M. The atmosphere of the hospital at night during the first two months of the year was far too low for the successful treatment of chest diseases, owing to the absence of fire-places (these, however, have been at length sanctioned in time to benefit the sick in hospital of the regiment which succeeded the 31st Native Infantry at that station). Rain was unusually scarce for the first eight months of the year. In September, however, 1·57 inches were collected at the observatory; this fell on six days during that month, and soon afterwards intermittent fever cases began to come into hospital. The whole amount of rain collected this year during the first nine months was only 3·67 inches, as compared with 12·04 inches which fell during those months in 1874. A few drops only fell during October; and from 20th October (date of marching from Mooltan) up to 31st December no rain fell in the localities in which the regiment was encamped. The greatest extremes of temperature between day and night were felt from 20th October to end of November, owing to the men, being under canvas, not having their huts to shelter them from cold at night or the shade of the lines to protect them from the direct rays of the midday sun. The cold at night under canvas at Camp of Exercise was felt severely, and several cases of chest disease, occurring as a consequence, were sent to the General Hospital at Hindoo Rao's house for shelter, warmth, and treatment.

Lines, &c. *V. Lines, &c.*—The regimental lines at Mooltan have been described in former reports, as has also their drainage and conservancy. The drainage and conservancy of the camp at Delhi was closely attended to. The Medical Officer reports that the water met with at the camping grounds during the first few days of the march was very sedimentary.

Diet. *IX. Diet.*—The diet was of the usual description, and it is stated that plenty of fresh vegetables were procurable on the line of march and at the camp.

Clothing. *X. Clothing.*—I have no further remarks to make with regard to clothing besides those in last year's report. On the march from Mooltan to Delhi and at the camp, the officers and men usually wore kakee coats over their warm clothing as a protection against dust, &c. The men were allowed to wear their native shoes whilst on the line of march, and this undoubtedly prevented the number of admissions for foot-sore from rising to so high a figure as it would have been if European-shaped boots had been worn.

Duties. *XI. Duties.*—The duties of the men have been invariably light during the whole year. Number of nights in bed:—havildars 20·41, naiks 6·62, sepoys 8·67.

Amusements off duty. *XII. Amusements off duty.*—Remarks as in former reports. Several of the native officers and men were successful as shikarees during the line of march.

Marches and service. *XIII. Marches and service (route to Delhi, 1875).*—The head-quarters of the regiment remained under canvas in this locality during the remainder of the year 1875. The Cawnpore Depôt detachment (135 strong), including the entire sick of the whole regiment, was detached at the Cabul Gate, Delhi, and marched towards Cawnpore on 7th December 1875. There being no serious cases amongst the 18 sick men sent with the depôt detachment to Cawnpore, the 2nd Hospital Assistant, Shew Persaud, was sent in medical charge of them. No deaths occurred during the march of the detachment to Cawnpore, and it reached that station by the 1st January 1876.

Hospital. *XIV. Hospital.*—The hospital at Mooltan has been fully described in former reports. It was improved in March last by the construction of fire-places, which, however, has only been for the benefit of the regiment which relieved the 31st Native Infantry. On the march and at the Camp of Exercise, the regulation sepoys' pâls were used as a hospital, but at the Camp of Exercise all cases of sickness requiring warmth and shelter were sent to the General Hospital, Native Troops, at Hindoo Rao's house, Delhi. Two cases of pneumonia and one of bronchial catarrh were sent from the regimental head-quarters' tents to General Hospital, Delhi, for treatment and shelter during December 1875; all the other sick at head-quarters of regiment during that month were treated in the regimental hospital tent. One of these two cases of pneumonia in General Hospital died on 24th December; the other two were transferred direct from General Hospital to Cawnpore by railway in a state of convalescence.

Sickness, mortality, and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	613·80
Absent	93·77
Total	707·57

Digitized by Google

Station.	Period.		Strength	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-Quarters at Mooltan and Camp of Exercise at Delhi.	1st Jan. 1875	31st Dec. 1875	560	827	10	20·31	147·68	1·78	3·62
Detachment at Cawnpore ...	7th Dec. 1875	Ditto	135	31	...	13·88	335·21	...	10·27
		Total ..	613·80	858	10	21·19	139·78	1·63	3·45

Number of deaths in hospital 10; out of hospital 4; total 14; per cent. of total strength						...	1·98
„ invalided	13;	„	„	...	...	1 83
„ sent on sick leave	4;	„	„	...	...	·56
„ of days spent in hospital 7,460; per admission 8·69; per man of total strength					...	...	10·54
„ „ on sick leave 308; per man	77;	„	„	...	...	·43
Total temporary loss of service per man of total strength						...	10·97

XVI. Chief causes of sickness.—The principal diseases admitted during the past year were, as usual, intermittent fevers, but not severe in character. Four of these ended in pneumonia out of a total of 426. Again this year the admissions into hospital for fever at Mooltan seemed to bear direct relation to amount of rain fallen. This year the fall of rain having been remarkably small, the number of fevers admitted was also small. This I was able to observe in the 13th Bengal Lancers' hospital as well as in the 31st Native Infantry hospital at Mooltan in consequence of my having been officiating for Dr. Daly, late 13th Bengal Lancers, during August, September and October, when he was absent on privilege leave. Chief causes of sickness.

There were 58 cases of chest disease admitted this year; of these, 31 were bronchial catarrh, 20 pneumonia, and 4 pleurisy. Two pneumonia following other chest disease and 1 chronic bronchitis. The greater exposure to cold night air under canvas than in quarters in cantonments seems to have caused more chest disease than occurred in the previous year. Seventy diseases of digestive system were admitted, of which 27 were dysentery, 17 diarrhœa, 6 congestion of spleen. Ninety-one cases of disease of cutaneous system occurred; of these 29 were ulcers, 39 were boils. None of the ulcers were so difficult to heal as the so-called "Mooltan sore" is said to be. One hundred and eleven accidental injuries were admitted; of these 60 were blistered feet—produced by marching after a long period of rest in cantonments—and 28 were contusions and sprains of the lower extremity, chiefly arising from the same cause.

XVII. Principal causes of mortality.—Pneumonia has been the chief cause of death in the regiment during the past 12 months. Two fatal cases occurred in January, and 3 fatal cases in March, in hospital, Mooltan, and 1 died in general hospital, Native troops, Delhi, where he had been sent for shelter and treatment. This man had had a severe attack of pleuro-pneumonia at Mooltan during the cold weather of the previous year. Probably old adhesions of pleura remained from former disease. Pneumonia and pneumonia following remittent fever seems to be the disease most fatal, also amongst civil population, at Mooltan during the cold season of each year. One fatal case of remittent fever, which had been taken into hospital in December 1874, occurred at Mooltan in January 1875, also in regimental hospital. One case of tubercular meningitis ended fatally also in regimental hospital, Mooltan, on 6th May, whilst I was on privilege leave. Principal causes of mortality.

The mortality in the regiment amongst "strength present" has been large this year as compared with that of 1874, when only 4 men died in regimental hospital. In that year, as in this, pneumonia was the chief cause of death.

XVIII. Epidemics.—No epidemic occurred at Mooltan during 1875 except the steady increase of intermittent fever, which seems to take place there every year after the rain has fallen. Measures were taken to place all sepoys and sowars returning from districts where cholera existed in quarantine for a few days before re-joining their regiments. Epidemics.

XIX. Vaccination.—The children in the regimental lines were not vaccinated during 1875, but 16 were done during the previous year. Vaccination.

XX. Recommendations made to regimental authorities.—The Medical Officer recommended in August that regimental tents should be used as dormitories in order to prevent the men from exposing themselves to heavy dew-fall and malarious influences during the night, and that 1½ ounces of rum should be issued to each man who wished to take it after sun down in the month of October, when the extremes of temperature between day and night commenced to increase; these recommendations were carried out. Recommendations made to regimental authorities.

Digitized by Google

Any special observations.

XXI. Any special observations.—I have no special observations to make this year, excepting that when at the Camp of Exercise, the general officer who commanded at Mooltan during 1873 and 1874 remarked on the great improvement in the healthy appearance of the regiment since he last saw it in his command at Mooltan. I attribute this improved condition of the men chiefly to the beneficial effects of regular daily exercise on the march in the early morning after a long residence in cantonments without much active exercise.

Inspection.

Inspected by Dr. J. P. Walker on the 29th March 1876.

The regiment arrived in Cawnpore from Mooltan on the 18th February 1876 and occupied the lines vacated by the 35th Regiment Native Infantry. All the arrangements in the lines with respect to the huts, drainage, water-supply, conservancy, &c., were considered satisfactory. On the day of inspection, there were 43 men in hospital, and none of them suffered from any serious illness; there were 12 cases of venereal disease under treatment which the Medical Officer states was contracted on the march from Mooltan. As the regiment had been but a short time at the station, the hospital and its surroundings were not found as clean and tidy as they might have been. Dr. Walker states that the therapeutic treatment of the patients was very satisfactory.

40th (The Shahjehanpore) Regiment of Native Infantry, Ferozepore.

Medical officers.

I. Medical officers.—Surgeon-Major Henry F. Williams was in charge during the period under review, and reports as follows:—

Year.	Station.	Per cent. of Strength.		
		Admission.	Deaths.	Daily sick.
1870 ...	Agra, February 1869, from Banda and Nowgong.	132·5	1·4	3·5
1871 ...	Ditto Ditto	138·6	1·5	3·7
1872 ...	Ferozepore, December 1872.	185·1	1·6	5·4
1873 ...	Ditto Ditto	165·9	·7	4·5
1874 ...	Ditto Ditto	175·4	4·2	5 4
	Average	159·50	1·12	4·50
1875 ...	Ferozepore.	222·66	·71	6·29

Location and movements.

II. Location and movements.—The regiment was stationed at Ferozepore throughout the year.

Meteorology and climate.

VI. Meteorology and climate.—The climate is dry and ordinarily healthy. The rain-fall of 1875, as registered at the dispensary about three miles distant, was 28·4 inches; the average for the 5 years ending December 1874 was 18·1. Owing to the sandy nature of the soil, the rainfall quickly percolates and dries up.

Lines, barracks, &c.

V. Lines, barracks, &c.—The lines have been fully described in former reports, and there was nothing connected with them in 1875 which called for special remark. Improvements in the ventilation of the barracks were made by heightening the doors; the barracks are said to answer admirably.

Drainage.

VI. Drainage.—The general drainage is as good as the flat nature of the ground and present engineering arrangements admit of; no water lodges for any lengthened period after rain, but is partly carried off by side drains into a large one, and partly absorbed by the sandy soil.

Conservancy and latrines.

VII. Conservancy and latrines.—The conservancy arrangements have been well cared for; all refuse is swept up and carried away by carts in the early morning outside cantonments and buried. The latrines are the same as described in last year's report,—one for male, a second for females,—constructed of mat, on the trench and dry-earth system, and have been shifted when necessary, the old ground filled in and cultivated. They appear to be more resorted to than formerly, and afford sufficient accommodation.

Water-supply.

VIII. Water-supply—Is from two pucca wells having raised sides 18 inches, and is good and abundant, the average depth from the surface being from 36 to 37 feet; no washing of clothes is ever permitted near either.

Diet.

IX. Diet.—The system of supervision pursued was fully detailed in last year's report, and the supplies are, as a rule, of the best quality, and vegetables abundant. The bazar is a good one to the south of the lines and is kept very clean.

Clothing.

X. Clothing.—The men have each one rezaie, one blanket, and great coat; the undress is left to themselves, and most of them wear a cotton-padded coat, or rezaie and dhoti, and many of them trowsers.

Duties and employment.

XI. Duties and employment.—The duties do not appear to have been excessive or to have exercised any prejudical influence on the health of the men, although the escort duties connected with the arsenal have been heavy.

Digitized by Google

XIV. Hospital.—The hospital has been fully detailed in former reports. The accommodation is good and sufficient, but the building is miserably cold, and the doors fit badly. Recently, fire-places have been constructed in the cross-wall dividing the building, one fire-place looking into each division; but these are practically useless. Formerly there was one iron stove in the centre of each ward, which really heated them, or both stoves could be placed in one room if the number of occupants were few, and one-fourth the quantity of fire-wood was necessitated. Purdahs have been indented for, for each of the arched openings, to the number of 27. The water of the well adjoining is unusually good and abundant. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality, and invaliding.

Present	...	...	...	580·69
Absent	...	...	...	114·60
Total	...	...	...	695·22

Station.	Period.		Strength.	Total Number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Ferozepore	1st Jan. 1875	31st Dec. 1875.	580·69	1182	3	36·43	222·66	·51	6·29

Number of deaths in hospital 3; out of hospital 2; total 5; per cent. of total strength			...	·71
" invalided	...	...	... 39; " "	... 5·60
" sent on sick leave	...	...	25; " "	... 3·59
" of days spent in hospital 13,296; per admission 11·12; per man of total strength				... 19·12
" " on sick leave 3,227; per man 129·08; " "				... 4·64
Total temporary loss of service per man of total strength				... 23·76

XVI. Principal cause of sickness.—The unusually heavy rain as compared with former years has no doubt been the chief cause of the excess of sickness, but if the general health of the regiment, which, on the whole, has been remarkably good, is compared with that of the surrounding population, the comparison is much in favor of the former, as fevers, bowel complaints and chest affections have been unusually severe, the admissions to the civil dispensary showing an excess over 1874 of fevers 404 and for bowel complaints 265, which gives but an inadequate idea of the greater prevalence throughout the whole district. Principal cause of sickness.

XVII. Mortality.—The mortality this year was 3 against 1 in 1874—one death from ague complicated with splenitis, in a recruit; the two others from remittent fever. Mortality.

This regiment was inspected by Mr. Tresidder, Deputy Surgeon-General of the Umballa Circle, on the 23rd December 1875. In the barracks of this regiment each sepoy has 57 square feet of superficial space and 515 cubic feet, and the floors are raised above the ground-level. The ventilation in the barracks is well provided for by high doors and by large and small openings in the walls. The water is considered to be of good quality, and was abundant; the latrine arrangements were considered to be satisfactory; the escort duty connected with the arsenal was rather heavy at times, but the men had upwards of five nights in bed on the average. The hospital details, with some few exceptions, which were capable of being readily remedied, were considered to be satisfactory. Mr. Tresidder considered the general appearance of the men to be excellent. Inspection.

Station Staff Hospital, Ferozepore.—Inspected on the 22nd December 1875. Mr. Tresidder reports that the former station staff hospital was burned down in 1874, and since then the present small bungalow, which is not at all well suited for the purpose, has been occupied; however, the new ordnance hospital will include accommodation for the station hospital, and therefore much comment on the present building is unnecessary. There is a cholera or small-pox hospital also in the station, which is considered to be sufficiently well suited for the purpose of treating these diseases, and all the contingent charges of it are met by the Cantonment Committee. The daily average number of sick in the station staff hospital during the preceding twelve months was 14·58, and the number of prescriptions made up for out-door patients, principally Europeans, was 255. All the details in this hospital, as relating to the medicines and instruments, were satisfactory. Station Staff Hospital, Ferozepore.

Ordnance Hospital, Ferozepore.—At present the sick from the Ordnance Department are temporarily located in a building which is but badly suited for the purpose of a hospital, but a new one, on the standard plan sanctioned for a Ordnance Hospital, Ferozepore.

Digitized by Google

native infantry regiment, and affording accommodation for 50 patients, will soon be built.

Mr. Tresidder inspected this hospital on the 22nd December 1875. The average strength of the Ordnance Department has been 900, and the daily average number of sick in hospital during the previous year was 16·10. The hospital equipment was incomplete.

Lock-hospital, Ferozepore.

Lock-Hospital, Ferozepore.—Inspected by Deputy Surgeon-General J. N. Tresidder on the 22nd December 1875. Since the old hospital was destroyed by fire in April 1874, other premises have been used, and recently the Cantonment Committee have purchased a bungalow near the bazar, which is well suited in all respects for a lock-hospital.

On the day of inspection there were 84 prostitutes on the register, *viz.*, 60 from cantonments and 24 from the city, and from this number there was but one patient in hospital; the average strength on the register for the preceding twelve months was 95, and the average number of daily sick was 2·27. The admissions of the prostitutes into hospital were for the following diseases, *viz.*, primary syphilis, 39; secondary syphilis, 1; and 12 for gonorrhœa. The strength of the European garrison during the past 12 months was 1,020, and from it 68 men were admitted on account of primary syphilis, 13 with secondary syphilis, and 70 suffering from gonorrhœa.

The hospital furniture and all the necessary appliances in it were satisfactory. The ablution rooms were clean and in good order.

1st Goorkha Regiment—Dharmsala.

Surgeon-Major C. F. Oldham has submitted the annual report, and writes as follows:—

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dharmsala ...	98·7	·8	2·4
1871 ...	Ditto ...	125·	1·6	3·6
1872 ...	Ditto ...	114·7	2·1	4·2
1873 ...	Ditto ...	117·2	2·2	4·3
1874 ...	Ditto ...	104·5	·6	3·7
...	Average ...	112·02	1·46	3·84
1875 ...	Dharmsala ...	147·32	4·57	4·49

Medical officers.

I. Medical Officers.—This report has been delayed owing to the absence of the regiment on service in the Malay Peninsula. Surgeon-Major C. F. Oldham held charge throughout the year. Surgeon G. Bomford was attached from 25th November to 31st December.

Location and movements.

II. Location and movements.—The regiment was quartered at Dharmsala until 30th October, when it marched to join the Camp of Exercise at Delhi; but from Umballa it was sent by rail to Calcutta, and on the 26th November embarked for the Malay Peninsula. On 10th December the regiment landed in Sungie Yujong, a Native State adjoining Malacca, where it was engaged on active service until the end of the year. There were small detachments at Malacca and Larut. A depôt of 100 men was left at Dharmsala with all the women and children; and the usual detachment of 48 men was stationed in Fort Kangra throughout the year. In July a portion of the regiment was encamped at Chaitroo, some three miles from cantonments, in consequence of an outbreak of cholera.

Topography.

III. Topography.—The topography of the station has been fully described in annual reports for 1873-74, and a description of the places occupied in the Malay Peninsula has been given in my special report upon the expedition dated 1st May 1876.

Meteorology.

IV. Meteorology.—The climate of the year did not present any unusual feature. During the cholera outbreak the rain was very heavy, but in July this is to be expected.

Lines and huts.

V. Lines and huts.—The state of the lines and huts remains much the same as at the time of last report, except that four new hut-barracks have been built; three of these are good, but the fourth, built on a cheaper plan, is very far from being perfect. It has a slate roof, without a ceiling, and has no doors, so that it is hot in summer and very cold and draughty in winter. Moreover, it has no verandah, which, in so rainy a climate as this, is a very great defect.

Drainage.

VI. Drainage.—The natural drainage is very good. The "lines," being situated between two deep ravines, water runs off immediately.

Conservancy.

VII. Conservancy.—Latrines on the "dry earth" system are provided for the sepoys and their families, those for women being separate; and apart from these, others have been built for the bazaar people. All are clean and in good order. Store-houses for dry earth have been

Digitized by Google

provided. During the cholera outbreak, in order to avoid all chance of the spread of infection from this source, the excreta from the hospital, &c., were mixed with earth, baked in gurrahs, and then buried. The gurrahs were arranged on chulas (native fire-places) for the purpose, and protected from the rain by a temporary roof.

VIII. Water-supply.—The water for drinking comes from springs, the reservoirs of which (bowlees) are protected by raised edges from the entrance of surface water. The quality is good, and the supply ample. The water-course passing through the cantonment, and the streams near are used for bathing, washing clothes, and watering animals also. Water-supply.

IX. Diet.—The men live well and consume a good deal of animal food in addition to their atta and dall or rice. Under-feeding is very rare. The bazaar supplies are regularly inspected, and are supervised by a Committee of native officers. Diet.

X. Clothing.—Cloth is worn in the cold weather and kakee drill in the hot season. The men are generally well clad in undress. The boots are still of ammunition pattern, and are worn without socks. The result is a great number of boot galls on every march. The regiment reached Umballa *en route* for Delhi, after 18 days' march, with 55 foot-sore in hospital out of a strength of 460. Clothing.

XI. Duty, &c.—The duty in cantonments is by no means heavy. On the campaign it was sometimes severe. The number of continuous nights in bed has averaged 4·65. Duty, &c.

XII. Exercise, amusements, &c.—Already described in report, 1874. Exercise, amusements, &c.

XIII. Marches and service.—On 30th October the regiment marched for the Camp of Exercise at Delhi; on 17th November it left Umballa by rail for Calcutta, and on 26th embarked on board S. S. *Malda* for Penang and the Malay Peninsula, arriving at Malacca, 10th December. The remainder of the year was spent on active service in the country bordering upon Malacca. Full details of the campaign have been given in my special report, dated 1st May 1876. Marches and service.

XIV. Hospital, &c.—The hospital building has been fully described in reports for 1873-74. Quarters for medical subordinates have not yet been provided, but a latrine has been built for the small-pox hospital. Hospital, &c.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	645·50
Absent	...	...	...	...	76·19
			Total	...	721·69

Station.	Period. From	Period. To	Strength.	Total numbers of: Admissions.	Total numbers of: Deaths.	Daily average number of sick.	Per cent. of strength per annum: Admissions.	Per cent. of strength per annum: Deaths.	Per cent. of strength per annum: Daily average sick.
Head-quarters at Dharmsala	1st Jan. 1875	30th Oct. 1875	646·35	709	20	29·03	132·14	3·72	3·09
Head-quarters on march...	31st Oct. „	26th Nov. „	468·15	130	...	26·56	375·39	...	5·67
Head-quarters at sea and on service in Malay Peninsula	27th Nov. „	31st Dec. „	467·	38	1	5·71	52·67	2·70	1·22
Detachment, Malacca ...	10th Dec. „	„ „ „	76·	5	...	1·31	109·17	...	1·72
„ Larut ...	18th „ „	„ „ „	56·	17	...	1·49	794·39	...	2·66
„ Chaitroo (cholera camp) ...	13th July „	9th Aug. „	161·65	25	7	5·76	201·61	56·45	3·56
Depôt at Dharmsala ...	31st Oct. „	31st Dec. „	144·48	27	2	8·14	109·97	8·14	5·63
Total ...	...	...	645·5	951	30	29·03	147·32	4·65	4·49

Number of deaths in hospital 30; out of hospital 3; total 33; per cent. of total strength			...	4·57
„ invalided	20;	„ „	...	2·77
„ sent on sick leave	2;	„ „	...	·27
„ of days spent in hospital 10,296; per admission 10·82; per man of total strength			...	14·26
„ „ on sick leave 83; per man ...	41;	„ „	...	·11
Total temporary loss of service per man of total strength			...	14·37

XVI. Principal causes of sickness.—The outbreak of cholera, which has been described in detail in my special report dated 18th August, caused 49 admissions. Fevers were as usual the most numerous class of diseases, giving a total of 405 cases. Of these, 397 were ague *a*, 5 ague *b*, and three remittent fever. In 1874 the total number of fever cases was 269, but that year was a particularly healthy one. There were 27 cases of dysentery and 19 of diarrhœa, against 16 of the former and 7 of the latter during the previous year. Fifteen cases of ophthalmic disease occurred, some of them severe, against 36 cases in the previous year. There were but 3 cases of primary syphilis and 2 of gonorrhœa. Of 21 cases of pulmonary Principal causes of sickness.

Digitized by Google

disease, 11 were pneumonia, 7 bronchitis, and 3 phthisis. There were 12 cases of measles, some of them complicated with severe bronchial symptoms. One hundred and one admissions were for blistered feet. Most of these occurred on the march from Dharmsala to Umballa, and were caused by the ammunition boot. There was one case of small-pox.

Principal causes of mortality.

XVII. Principal causes of mortality.—The mortality, which has been considerable, was mainly due to the severe outbreak of cholera already referred to, which caused 19 of the 32 deaths in and out of hospital. In the regimental hospital, the deaths were, cholera 11, phthisis 3, pneumonia 2, myelitis 1, remittent fever 1, hydrophobia 1. At the Chaitroo cholera camp, the deaths were, cholera 7, and diarrhœa 1. In the depôt hospital, during the absence of the regiment, there was 1 death from enteritis, and 1 from pneumonia.

Besides these, 1 man was killed in action and 1 died of wounds in the Malay Peninsula; 1 man died on furlough, supposed from fever, and 1 man of cholera in the jungle near Dhurmsala, where he had gone to cut fire-wood. The man who died of hydrophobia had been bitten by a strange dog seven weeks before, and the wound had been cauterized at the time. The first symptoms noticed were a rigidity of the muscles of the neck, then inability to swallow and starting at the sight of water. Chloral in large doses at first gave relief, but its effects were only temporary.

The man killed and the man who died of wounds were both shot through the neck. The latter died from the effects of secondary hemorrhage. The artery was cut down upon and secured, but the man had lost so much blood that he never rallied. He died eight hours after the operation.

Epidemics.

XVIII. Epidemics.—On 2nd July cholera broke out in the regiment. The first person attacked was the Bugle Major, a strong, healthy Eurasian, who had not been out of cantonments for several weeks. He was attacked at 4 P. M. on 2nd, was taken to hospital in a state of collapse at 3 o'clock next morning, and died four hours afterwards. After this, cases occurred daily until 18th July, after which, one case was admitted on 21st and two on 25th. The greatest number of admissions in one day was eight. In all 1 European officer, 49 sepoys, and 49 followers, including women and children, were admitted, of whom 18 sepoys and 21 followers died. Another sepoy died out of hospital, having been attacked while cutting wood in the jungle at some distance from cantonments.

The means by which cholera entered the cantonment could not be traced, but the disease had apparently made its appearance in the jail some days before, as a prisoner attacked with diarrhœa on 28th June died on 1st July; another, admitted next day, died on 3rd July; on 4th a death was reported from cholera, and on 8th and 9th July other deaths from diarrhœa. Cholera had for some time before this been prevalent in Mundi, a neighbouring Native State where it had been introduced by the followers of the Rajah on his return from Hurdwar. Every precaution was taken to check the spread of the disease. Those suffering from other complaints were removed to the small-pox hospital, and one ward of the regimental hospital was set apart for the women and children. Every hut in which a case of cholera occurred was at once vacated, fumigated with sulphur, the floor dug up, and the walls scraped and re-leeped. To prevent any chance of the disease spreading by means of the excreta, these were received into gumlahs half full of dry earth, which were emptied into gurrahs placed upon chulahs, in which fires were kept burning. After baking for an hour, the contents were buried. McDougal's powder was placed in each ward and the attendants were directed to clean their hands with it frequently. All clothing and bedding was boiled before it was allowed to leave the hospital The men were attended by their comrades, who performed the duty admirably. The very heavy and incessant rain added considerably to the difficulty of dealing with the outbreak. Each of the attendants was allowed half a dram of rum night and morning, and a bunniah was stationed near the hospital to supply them with food, as they were not allowed to visit the lines. On the 8th July, all the men without families, 280 in number, went into camp at the further extremity of the parade ground—a distance of half a mile from the lines, with which all communication was forbidden. Next day 1 man was attacked in camp; on 10th, 3; 11th, 3; and on 12th, 3; making 10 cases and 3 deaths. On 13th, carriage having been obtained and the services of Dr. Quinnell, Civil Surgeon, having been made available for duty with the camp, the detachment moved to the Chaitroo hill, five miles south of cantonments. On 17th, Dr. Quinnell was relieved by Dr. Finden. At this camp 1 case occurred on 14th, 2 on 15th, 2 on 17th, 1 on 21st, and 2 on 25th,—in all 8 cases, of which 6 died. The detachment returned from Chaitroo on 2nd August.

One officer (Colonel Rawlins, commanding the regiment) was attacked and recovered. Of those engaged in attendance upon the sick, 1 hospital compounder, 2 dooly bearers, and 8 orderlies were attacked, and 3 of the latter died. Of the 7 sweepers employed, all escaped the disease. The escape of the men who were constantly engaged with cholera excreta, and the number of attacks amongst those who, though in close attendance upon the sick, carefully avoided all contact with such matters, goes far, I think, to prove that the contagion does not reside only, or even especially, in the stools or vomit.

In the treatment of the disease, opiates were used carefully and combined with astringents, and were decidedly useful in checking the diarrhœa, while stimulants were given during the stage of collapse with great advantage. As nourishment, milk, more or less diluted with water, according to the degree of thirst, was given without stint. Sinapisms were used in every case. The hypodermic injection of morphia, half a grain at a time, was found most effectual in checking the vomiting. In some cases a single application was sufficient, but in others a repetition was necessary. Colonel Rawlins, in whose case the injection was repeated six times, noticed that each application produced immediate relief from the distressing nausea.

Digitized by Google

The move into camp was not in this instance so decidedly beneficial as is sometimes the case. At Chaitroo; cholera lingered until 25th July, while in the lines no case occurred after 18th. In camp too, in proportion to the strength, the cases were as numerous as in the lines, and the deaths were more so.

XIX. Vaccination.—Three recruits and 44 children were vaccinated successfully. Most of the recruits have been inoculated before leaving Nepal. Vaccination.

XX. Recommendation.—Recommendations made during the cholera outbreak were acted upon immediately. They related to the vacating, cleansing and disinfecting of infected huts; attendance upon the sick; removal of the men into camp; and matters connected with the sanitation of the cantonment. Occasional verbal suggestions, relative to the clothing of the men and other matters, have also been carried out. Recommendation.

Deputy Surgeon-General G. H. Ray, M. D., of the Lahore Circle, reports on the 12th July as follows: "I was unable to make a formal inspection of the Goorkhas, owing to the regiment suffering from an outbreak of epidemic cholera at the time of my visiting Dharmsala. As already reported, I had great reason to be satisfied with the admirable way in which Surgeon-Major Oldham and the whole of his subordinate establishment performed their duties." Inspection.

4th Goorkha Regiment,—Bakloh.

I. Medical Officers.—Surgeon-Major G. C. Chesnaye held medical charge of the head-quarters throughout the year. Surgeon-Major P. W. Sutherland held charge of the Simla detachment from 3rd April to 6th November. The former officer has submitted the annual sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Bakloh	77·1	·9	2·7
1871 ...	Ditto and Looshai ...	140·4	2·8	3·4
1872 ...	Ditto, April, from Looshai.	181··	1·6	5·2
1873 ...	Ditto	98·2	1·1	3·1
1874 ...	Ditto	91 9	·5	2·8
	Average	117·72	1·38	3·44
1875 ...	Bakloh	119·50	1·69	4·10

II. Location and movements.—The regimental head-quarters remained at Bakloh from 1st January to 19th October, when it marched for the camp of exercise. The Simla detachment marched from Bakloh on the 5th and re-joined head-quarters at Umballa on the 16th November. A depôt was left at Bakloh on the departure of head-quarters and continued to remain there to the end of the year. Location and movements.

III. Topography, &c.—*Vide* former annual reports. Topography, &c.

IV. Climate.—Characterized by a very mild winter with neither snow nor wind storms of any severity. An unusually early setting in of hot weather and exceedingly heavy rains, which commenced on the 23rd of June and lasted to the 7th of October. During this period, the rainfall exceeded the average total fall for a whole year, 76 inches having been collected within the four months, whereas the usual annual rainfall at this station is only 70·20. The amount collected up to the 19th October was 95·94 inches. Climate.

A description of the lines, drainage, conservancy, &c., has been given in former reports and need not now be repeated. The duty is said to have been light throughout the year—number of nights in bed averaged upwards of 5, excepting for a short period, on the march to Delhi, when they fell to 1 in 2.

XIII. Marches.—The head-quarters marched from Bakloh to join the camp of exercise on the 19th October. Rain had been falling heavily up to within 12 days previously and all the low-lying country in the district was still deeply flooded. Cholera had been severely epidemic in the neighbourhood, and the intended route of the regiment had to be modified in parts, in other parts completely changed in consequence. The entire Gurdaspore district was suffering from adynamic fever, which caused great mortality in the civil population. The encamping grounds occupied as far down as Umballa were in all cases very damp, and in many, notably those at Purmanund and Kartarpore, no better than so many morasses, in which the water level was a couple of inches above the surface of the ground. After passing Umballa, although the ground became even lower than that previously traversed, there had been more time since the rain had fallen and the country was dryer. From arrival at the camp of exercise, the climate and soil were everything to be desired, and although a great deal of sickness had occurred on the road, attributable to climate, the men daily improved in health at Delhi, and the number in hospital progressively decreased. Marches.

XIV. Hospital.—Described in previous reports. The deficiencies complained of therein, however, have all been ordered to be remedied. As these operations have been commenced subsequent to our march. I am unable to describe them. I trust that by the time the regiment shall have returned to Bakloh the hospital shall be in every respect complete for all purposes.

Digitized by Google

Sickness, mortality and Invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment:—

Present	...	...	...	...	654·90
Absent	...	...	...	...	54·09
			Total	...	708·99

Station.	Periods.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-Quarters at Bakloh and Camp of Exercise	1st Jan., 1875	31st Dec., 1875	514·16	598	7	22·19	116·2	1·36	4·31
Simla Detachment ...	5th Mar., 1875	15th Nov., 1875	172·33	147	2	8·24	122·8	1·66	1·89
Bakloh Depôt	20th Oct., 1875	31st Dec., 1875	102·73	37	1	1·47	182·5	4·94	1·43
Total ...	...	...	654·90	782	10	26·90	119·50	1·52	4·10

Number of deaths in hospital 10; out of hospital 2; total 12;	per cent. of total strength ...			1·69
„ invalided 46;	„ ...			6·48
„ sent on sick leave 1;	„ „ ...			·14
„ of days spent in hospital 9,820; per admission 12·55;	per man of total strength ...			13·85
„ „ on sick leave ... 92; per man ... 92;	„ „ ...			·12
Total temporary loss of service per man of total strength ...				13·97

Principal causes of sickness.

XVI. Principal causes of sickness.—The amount of sickness under treatment during 1875 has been greater than in any year since 1872 (the year that the regiment returned from the Lushai Expedition, in which year 1,034 men were admitted to hospital), the admissions having been 584 in 1873, 587 in 1874, and 782 in 1875. The year was, as far as I know, an unusually sickly one throughout the Punjab, and although there was more than usual sickness in the regiment, as compared with the last two years, the men suffered very much less than the surrounding population, and even the Simla Detachment, for a considerable period exposed to a severe epidemic of cholera, did not suffer as much from this cause as the other population of Simla.

As usual, a large proportion of admissions for paroxysmal fevers occurred; 270 men were admitted for this group of diseases, 252 being cases of quotidian, 8 of tertian, and 10 of quartan ague, the admissions in 1873 and 1874 having been 210 and 154. The state of country through which the regiment marched in October and November, as described in paragraph XIII, will, however, I think, fully account for this increase, which I do not think has anything to do with the climate of Bakloh, or the sanitary condition of the barracks or lines of the regiment. Next in order of numbers admitted comes the category of injuries, amounting altogether to 190, including one case of gun-shot wound accidentally self-inflicted, necessitating amputation through the forearm, and a case of lightning strike, which occurred a few days before the regiment marched for Delhi. With exception of these two cases already detailed in weekly returns, there is nothing of interest to remark about the class, which included almost every possible description of trivial injury. The foregoing accounts for nearly 60 per cent. of the admissions of the year. Sixty-three cases of rheumatism, which, however, have very seriously increased the daily average number of sick in proportion, have been treated; these mostly in men who have lately completed the term of service qualifying for pension. I find that from the 1st January to the date on which the detail of men to appear before the Annual Invaliding Committee left Bakloh, about 18th March, over 50 per cent. of the total sick are shown under this head; that no possible treatment improves their condition, which, however, sensibly improves from the day they pass the board.

Venereal diseases have never been, at least in their primary stages, rife in this regiment. They occur, as might be expected, most frequently in the Simla Detachment. The total number treated has been 30, *viz.*, syphilis 16 and gonorrhœa and sequelæ 14. Ophthalmia occurs every year at Bakloh, first from glare in the hot weather, this turning to catarrhal ophthalmia in the rains. Twenty-four cases were admitted. This is rather under the average, and none of them were severe.

Diseases of the respiratory system, some of a very severe type, were present to an unusual extent during the spring months. Forty-two cases were admitted, including 3 of acute bronchitis, 5 of severe pneumonia, and 9 of acute pleurisy.

Diseases of the digestive system gave in all 91 admissions. The only diseases deserving attention were dysentery and diarrhœa. Of the former no severe cases were under observation, and all the cases of diarrhœa occurred either at Simla during the cholera epidemic there, or else just after arrival of the regiment at Delhi, from excess of diet or drinking brackish water; none of the latter lasted much over a day.

Principal causes of mortality.

XVII. Principal causes of mortality.—Twelve cases proved fatal during the year, 10 dying in hospital and 2 at their homes on furlough. Of the former, 6 died in head-quarters' regimental hospital; 2 at detachment hospital, at Simla, of cholera during the epidemic; 1 in the Bakloh depôt hospital, subsequent to the regiment's march to Delhi, and one in the General Hospital, Native Troops, at Hindoo Rao's house. Of the 6 casualties in regimental head-quarters' hospital, the first was a naik, who had been sent before the Annual Invaliding Committee of 1874 for discharge on account of chronic pleurisy, and was rejected as fit for service. He returned to the regiment, remained nearly a year, constantly in hospital, and died

Digitized by Google

as he was about to start for Meean Meer to appear before the Invaliding Committee of 1875. The two next cases proving fatal were (1) a lad of 17 that had been rejected as unfit to be enlisted as a sepoy on account of badly formed chest, but subsequently passed as a bugler, died of double pneumonia on the sixth day; and (2) a very severe case of acute pleurisy, with rapid and extensive effusion of lymph and semi-purulent matter in both pleural cavities. The 4th case that proved fatal was that of a sepoy who had been sent before the Invaliding Committee of 1874 on account of old standing rheumatic affection of the knee with large exostosis from the head of tibia; was rejected and remained 12 months subsequently in hospital; was passed by the Committee of 1875. Immediately on return from Meean Meer he returned to hospital and died of prostration five days after. The 5th case was one purely of Terai fever in a recruit of 18, just joined the regiment, death being result of prostration from persistent recurrences of the paroxysm in spite of treatment. The 6th case was that of a man admitted to hospital in 1873 for scrofula. During the two years he had been in hospital he never became in a condition that would permit of his discharge, and for humanity's sake he had been retained in hospital during his life-time without hope of his recovery, or even of improvement in his condition. Prior to death, the mesenteric glands could be felt beneath the abdominal paricles, each as large as a large clenched fist.

XVIII. Epidemics.—Measles were epidemic in the early part of the year and soon after the rains first fell. Cholera became epidemic along the greater part of the hill ranges from Mussoorie northwards. The disease attacked the detachment at Simla, 4 men becoming affected with the disease there in July with 2 casualties, although for nearly 3 months cholera was severely epidemic in the immediate neighbourhood of Bakloh. Case occurred in the station; no other disease was epidemic. Epidemics.

XIX. Vaccination.—All recruits are now vaccinated at the frontier on enlistment, and are carefully examined in joining the regiment. All children, both of camp followers and sepoys, are vaccinated within a couple of months of their birth. The regiment throughout is well protected from small-pox. Vaccination.

XX. Recommendations.—The recommendations made were mainly directed towards prevention of exposure to cholera influences, either through strangers coming into the station from infected places, or through our men being allowed to leave their station and go into infected villages. A modified quarantine was thus kept up for months while cholera was in the district, and it proved sufficient for prevention of the disease. Recommendation.

Inspected by Dr. G. H. Ray, Deputy Surgeon-General of the Lahore Circle, on the 4th June 1875, and the following observations have been extracted from his report: Inspection.

There were no latrines in use with this regiment, and, instead, the men are allowed to resort to the hillside for necessary purposes; the water-supply is derived from springs, and, it is said, was all that could be desired. Dr. Ray reports the men in this regiment suffer much from blisters and ulcers of the feet when on the line of march. The medical officer of the regiment attributes some of his most serious cases to debility, caused by the constant duty which the men of the Simla detachment have to undergo when at that sanitarium. All the details in hospital in connexion with the comfort or treatment of the sick were satisfactory, with the exception that there was no bath-room for the use of the patients.

RAWAL PINDI DIVISION

(INCLUDING THE STATIONS OF RAWAL PINDI, JHELUM, SIALKOT AND TALAGANG).

Average strength present during the year ...	...	Cavalry	1124·77 ;	Infantry	3735·53
Average daily sick per cent. of the average strength	...	„	3·08	„	2·56
Ratio of mortality per cent. of the average strength	...	„	·58	„	·76

14th Bengal Cavalry (Lancers)—Rawal Pindi.

Surgeon G. Watson, M.B., reports:—

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Deoli, December 1869 ...	228·	1·2	8·4
1871 ...	Ditto ditto ...	134·2	1·	5·1
1872 ...	Ditto ditto ...	156·5	1·	5·8
1873 ...	Ditto ditto ...	170·4	·8	6·2
1874 ...	Rawal Pindi, January 1874	117·16	1·10	4·4
	Average ...	161·25	1·02	5·99
1875 ...	Rawal Pindi ...	76·85	·87	2·45

I. Medical Officers.—Surgeon Major B. Kendall was in medical charge of the regiment from 1st January to 10th February. Surgeon Geo. Watson, M. D., assumed charge on the 10th February, and remained to the end of the year. Medical Officers.

The regiment has been stationary throughout the year, and furnished no detachments. Location.

Digitized by Google

Topography. A topographical description of the station has been formerly given. Dr. Watson describes the rainfall as having been above the average, and unevenly distributed; very heavy falls late in the season produced floods such as were not known for years. He does not look on Rawal Pindi as a malarious station, but considers that the mild form of autumnal fever met with is dependent more or less on the vicissitudes of temperature acting on constitutions already saturated with the *materies morbi*. The lines are said to have been in a fair state of repair and clean. The ventilation was not considered as good as it might have been; but as there was no overcrowding, the medical officer does not think the men suffered in consequence. The natural drainage in and around the lines is very good: the drains were frequently cleaned out, and no water lay stagnant at any time. The "dry-earth" system was carried out in the latrines, the walls of which were in a dilapidated state. The conservancy of the latrines was not what it should have been, as the medical officer reports that the "floor has become saturated with urine, and is somewhat offensive." Many of the men, too, preferred to resort to the nullas in the neighbourhood for necessary purposes. The water-supply was from wells, and was abundant and of good quality. The various articles of food have been uniformly good, plentiful and cheap, and the bazaar has been clean and well ordered. The Jâts in this regiment have messes of their own, and live well. They partake liberally of milk, vegetables, and many of them use flesh of all kinds, with the exception of beef: they also indulge in stimulants in moderation, rum being their favorite liquor. In consequence of the way they live, the men are in a high state of physical development, and underfeeding has been unknown. The clothing is of the same kind as formerly described, and is well adapted to the climate and duties the men have to perform. The duties were in no way excessive, and the men had from 6 to 10 nights in 11.

Lines. Drainage. Conservancy. Water-supply. Diet. Clothing. Duties.

Hospital. *XIV. Hospital.*—The hospital is all that could be desired. It is conveniently and well situated, and is in excellent repair, and its accommodation is more than sufficient for all ordinary requirements. The hospital equipment is complete and perfect. The quarters for the hospital establishment are in a fair state of repair. The wards were comfortably warmed during the cold season, and the patients' bedding and clothing invariably good and clean. A row of trees has been planted round the hospital, which will in course of time afford a grateful shade.

Sickness, mortality and invaliding. *XV.—Sickness, mortality and invaliding.*—Strength of the regiment:

Present	...	...	...	...	...	373·45
Absent	...	...	...	...	...	82·28
Total					...	455·73

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Rawal Pindi	1st Jan. ...	31st Dec. ...	373·45	287	3	9·15	76·85	·80	2·45

Number of deaths in hospital 3; out of hospital 1; total	4;	per cent. of total strength	...	·87
„ invalided	17;	„ „	...	3·73
„ sent on sick leave	3;	„ „	...	·65
„ of days spent in hospital 3,332;	per admission 11·60;	per man of total strength	...	7·31
„ „ on sick leave 504;	per man ... 168;	„ „	...	1·10
Total temporary loss of service per man of total strength			...	8·41

Principal causes of sickness. *XVI. Principal causes of sickness.*—Two hundred and ninety-eight cases of sickness were treated in the head-quarters hospital during the year: of these, 277 recovered and were discharged to duty, 8 were discharged otherwise, 3 died, and 10 remained under treatment on the last day of the year. The principal causes of admissions into hospital have been malarious fever, rheumatism, bowel-complaints, and contusions and other injuries incidental to the cavalry soldier. There has been a very considerable decrease in the number of admissions, being 287 against 451 in the previous year. The daily average sick during the year was 9·15 against 17·16 in 1874. The number of days in hospital per admission 11·60 against 13·49 in the previous year. As usual, ague heads the list in the number of admissions, yielding 103: rheumatism gave 28, bowel-complaints caused 22, and contusions and other injuries, 48.

Digitized by Google

XVII. Principal causes of mortality.—The mortality during the year has fortunately been small: of the 298 cases treated, 3 proved fatal, and one man died at his home while on furlough. The first case was in an old debilitated man who was admitted suffering from rheumatism: under treatment the rheumatic pains left him, but he gradually sank without any manifestation of specific disease. The second case occurred in June in a fine, strongly-built non-commissioned officer who was admitted suffering from a slight attack of ague. Early one afternoon he had his bed removed to the verandah, and there, in a temperature of 110,° lay down to sleep; symptoms of sunstroke rapidly supervened, and he died very suddenly. The last case was in an old broken-down man who was admitted suffering from retention of urine, the result of an enlarged prostate. Under catheterism the symptoms were completely relieved, but he gradually sank and died exhausted. Principal causes of mortality.

XVIII. Epidemics.—Fortunately there have been no epidemic visitations in Rawal Pindi or the neighbourhood during the year. Epidemics.

XIX. Vaccination.—A number of children were successfully vaccinated during the early part of the year. Vaccination.

XX. Recommendations.—A few recommendations of minor importance were made during the year and invariably met with a ready response from the commanding officer. Recommendations.

XXI. Special observations.—The regiment was chiefly recruited from the districts of Rohtak, and Aligarh and no difficulty was experienced in filling the vacant ranks with strong, deep-chested young men. The health of the camp-followers has been satisfactory. Early in the year a few cases of small-pox occurred, but under prompt segregation the disease was soon stamped out. Special observations.

Mr. Banister, Deputy Surgeon-General of the Rawal Pindi Circle, reports that he inspected this regiment on the 19th October 1875, and found the daily average number of sick to be 9 or 10 against an average of 17 in 1874. The lines cover a large area, but the huts were considered to be confined and badly ventilated. He found the hospital, which is perhaps the best in the circle, in perfect order, and with its equipment complete and serviceable. Most of the sick in hospital had suffered from autumnal fever, but none of them caused any serious apprehension. Of the 40 recruits, 4 were very indifferent, and 2 physically unfit. Inspection.

14th (The Ferozepore) Regiment Native Infantry—Rawal Pindi.

I. Medical Officers.—Surgeon H. Boyd was in medical charge of the regiment from January 1st to August 6th. Surgeon W. A. C. Roe held charge from 6th to 10th of August, when he was relieved by Surgeon R. N. Stoker. A detachment at Attock Fort, from January 1st to March 5th, was in charge of the Garrison Surgeon; and a second detachment at Murree, from June 17th to September 17th, was in charge of Surgeon-Major A. Taylor, Civil Surgeon of Murree. Surgeon R. N. Stoker writes the Annual Sanitary Report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Jullundur, March 1870	187·2	3·8	7·3
1871 ...	Ditto ditto ...	111·4	2·1	7·3
1872 ...	Rawal Pindi, April 1872	65·8	1·1	4·6
1873 ...	Ditto ditto ...	53·3	1·5	2·1
1874 ...	Ditto ditto ...	72·5	·87	2·7
	Average	100·04	1·87	4·80
1875 ...	Peshawar, Dec. 1875 ...	63·77	·58	2·65

II. Location and movements.—The head-quarters of the regiment were stationed at Rawal Pindi from January 1st to December 10th, when the regiment marched for Peshawar, which was reached on the 18th December, and the lines, vacated by the 12th Native Infantry, at once occupied. During the year a detachment, 140 strong, was at Attock from January 1st to March 5th; and one, 57 strong, was at Murree from June 17th to September 17th. No reliefs were sent to either detachment. Location and movements.

III. Topography.—The topography of Peshawar and its neighbourhood has been already fully described: *vide* reports of the 25th Punjab Native Infantry for 1868, and of the 15th Bengal Cavalry and 16th Bengal Cavalry for 1870. Topography.

IV. Meteorology and climate.—No instruments have been available. Since the arrival of the regiment in Peshawar the rainfall has been rather heavy. Meteorology and climate.

V. Lines, barracks or huts.—The lines are those previously occupied by the 12th Native Infantry, and have been well described by Surgeon-Major McDermott in the report of the 15th Native Infantry for 1870. The only change which has apparently taken place since then has been the digging out of the interior of many of the huts to a depth of eight to eighteen Lines, barracks or huts.

Digitized by Google

inches, to enable the men to stand upright when inside; with the additional effect of rendering the huts damp and uncomfortable, since no drainage, however good, will suffice to ensure the dryness of huts whose floors are below the level of running streams a few feet distant, as is the case with many of these. Otherwise the huts are in good repair, and the accommotion is sufficient.

Drainage.

VI. Drainage.—The drainage of the lines is good, there being a sufficient natural fall in the ground, and no lodgment of rain or refuse water.

Conservancy and latrines.

VII. Conservancy and latrines.—The latrines are on the trench system; but being situated on the right front of the lines, and two or three hundred yards on the outer side of the circular road, they are not available after dark, at which time the men are allowed to use the hospital latrine—a roofed kutcha building, worked on the "dry-earth system." This hardly affords sufficient accommodation, but a second latrine is being built, which will supply all that is needed. There are six urinals in the lines, with three receptacles in each. The night-soil is removed twice daily, beyond cantonment limits, by a contractor, whose pay is drawn through the regiment. On the whole, the conservancy arrangements are satisfactory, but require constant supervision.

Water-supply.

VIII. Water-supply.—The water-supply is derived from the Bara river, and runs the whole length of the station in open channels, receiving a great part of the surface drainage in its course. These channels are systematically used by the natives for washing both themselves and their clothes, and as receptacles for all the filth that they are too lazy to remove in a proper manner. As the lines occupied by the 14th are the last in the station with regard to the course of the water, it can be well understood that by the time it reaches them it is in a most filthily impure condition. Some attempt has been made to purify it by a series of tanks, allowing the water to settle in one tank before passing into a second, whence the drinking water is taken. This system is of no practical value, as only the sand and mud are got rid of, and the really dangerous impurities still remain: however, in addition to this, filters of sand and charcoal are being constructed, and it is hoped that the water may be, to some extent, purified. There are tanks for bathing and washing in; but the men prefer to wash at the streams which flow through the lines. All washing of clothes is carried on outside the cantonments.

Diet.

IX. Diet.—The sepoys obtain their food from the regimental bazaar, which is inspected twice daily by the native officer on duty, and weekly by the quartermaster and the medical officer. The bazaar is in fair order, and supplies are plentiful and cheap, vegetables being especially good. Most of the men eat meat once or twice a week: usually goat's flesh or fowl. Since the arrival of the regiment in Peshawar, a daily ration of rum has been sanctioned. It is issued in the evening to any man who wishes it, and appears to answer very well. No instances of under-feeding have come under my notice since I joined the regiment; and the few badly nourished men I have seen have generally been found to be inveterate opium-eaters.

Clothing.

X. Clothing.—The winter clothing consists of the regulation scarlet tunic without collar, and serge knickerbockers, forming gaiters above the ankle. In the hot season both tunic and knickerbockers are of white drill. A cloth great-coat is worn in winter and on night duty. The native shoe is worn by all ranks without stockings, and seems to suit very well; there being only two or three admissions for sore feet during the march, though the average daily distance was over fourteen miles.

Duty and employment.

XI. Duty and employment.—The ordinary station duties are rather heavy, there being a great many guards and orderlies to supply, and escort parties to Pindi in addition to the usual daily parades, and a detachment of 89 men at Fort Michni. However, the inefficient list is so small that the men are not overworked for the time of year. The number of nights in bed, for the year, was 6·37; but since arriving at Peshawar it has been 7·25.

Exercise, amusements and occupation.

XII. Exercise, amusements and occupation.—The men are very fond of strolling a few miles into the surrounding country in parties of three or four, and in this manner get a good deal of exercise. They are very fond of *shikar*; when there is any to be had, and, in and about the lines, they work in their gardens or indulge in quoit-throwing or wrestling.

Marches and service.

XIII. Marches and service.—The only march during the year has been from Rawal Pindi to Peshawar, a distance of seven marches, averaging a little over 14 miles. The weather was fine, though cold, and nothing of interest occurred during the march.

Hospital.

XIV. Hospital.—The hospital has been already described (*see* report of 15th Native Infantry for 1870), and the only change consists in the recent construction of three ventilating openings in the ridge of the roof. It is well raised off the ground, is in good repair, and at present, affords ample accommodation. It is fairly warmed by a central, double fire-place; and all patients, on admission, are supplied with a rezai, sheets and pillow and bed-gown, in addition to their own bedding. These articles are supplied from a fund supported by the subscriptions of all the officers and men of the regiment, which also supplies such extra comforts as may be considered necessary by the medical officer.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment:—

Present	606·8
Absent	80·3
Total	687·1

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total numbers of Admissions.	Total numbers of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Rawal Pindi and Peshawar.	1st Jan. ...	31st Dec. ...	566·4	340	4	14·95	60·02	·7	2·6
Detachment at Attock ...	Ditto ...	17th Mar. ...	137·1	13	..	3·57	44·21	...	2·60
„ at Murree ...	17th June ...	17th Sept. ...	54·7	34	...	1·29	236·30	...	2·35
Total ...	...	...	606·8	387	4	16·14	63·77	·65	2·65

Number of deaths in hospital 4; out of hospital 0; total 4; per cent of total strength ...		...	·58
„ invalided 7;	„ „ ...	...	1·01
„ sent on sick leave 1;	„ „ ...	...	·14
„ of days spent in hospital 5,554; per admission 14·35;	per man of total strength ...	...	8·08
„ „ on sick leave 176; per man 176;	„ „ ...	...	·25
Total temporary loss of service per man of total strength		...	8·35

XVI. Principal causes of sickness.—There were 430 cases of sickness treated in the hospital at head-quarters and detachments during the year. Of these, 403 were discharged to duty, 1 went on sick leave, 4 were invalided, 4 died at head-quarters, and 18 remained in hospital at the end of the year. The number of admissions during the year was 387, of which 125, or 32 per cent. of the whole, were due to ague; 70 admissions were caused by diseases of the digestive system, of which 33 were for dysentery and 19 for diarrhœa. Diseases of the respiratory system caused 33 admissions, of which 24 were for bronchitis, 2 for pneumonia, 2 for pleurisy, and 1 for phthisis. Boils caused 31 admissions, ulcers 16, ophthalmia 8, rheumatism 13, syphilis 1, gonorrhœa 4, injuries 52, and sunstroke 2. Principal causes of sickness.

XVII. Principal causes of mortality.—There have been only 4 deaths during the year: 2 from bronchitis, 1 from fever, and 1 cause unknown. This last was suspected to be a case of suicide by poison, but the hospital records do not show whether any proof of poisoning was obtained. The death from fever occurred in the person of a sepoy who, while suffering from what appears to have been remittent fever, rather than forego the annual rifle practice, remained out of hospital until absolutely dying. Principal causes of mortality.

XVIII. Epidemics.—No disease was epidemic in the regiment during the year. Epidemics.

XIX. Vaccination.—A few children have been vaccinated with success, but there have been no operations among the sepoys. Vaccination.

XX. Recommendations.—Several recommendations have been made during the year as to details of sanitation, water-supply, &c., and they have always received the best attention of the regimental authorities. Arrangements are now nearly completed for the filtration of the drinking and cooking water before it is supplied to the lines, and a further report will, if thought necessary, be submitted as to the success of the measure. Recommendations.

This regiment was inspected by Deputy Surgeon-General Banister on the 16th October 1875. The sickness and mortality during the year had been at a very low rate, and the number invalided and on sick leave was inconsiderable. On the day of inspection, Mr. Banister found the lines in very fair order, but defective in space and ventilation like all those erected under the old hutting arrangements. The hospital, though affording ample accommodation, was anything but conveniently arranged, and most objectionably situated in the immediate vicinity of the sudder bazaar. On the day of inspection, there were 22 on the sick list, 2 under observation, and 1 on medical certificate. There was a sufficient supply of medicines, but some of the instruments were in unserviceable order, while others needed repair. Inspection.

Digitized by Google

21st (Punjab) Regiment Native Infantry—Rawal Pindi.

Medical Officers.

I. Medical Officers.—Surgeon W. A. C. Roe was in medical charge of the regiment during the year with the exception of two months, from 16th June to 14th August, when Surgeon G. Watson, M.D., officiated for him. The former medical officer has written the Annual Sanitary Report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Peshawar, Nov. 1870 ...	161·5	5·8	5·8
1871 ...	Ditto ditto ...	146·9	2·8	3·
1872 ...	Ditto ditto ...	87·6	2·	2·
1873 ...	Ditto ditto ...	100·9	4·	2·5
1874 ...	Rawal Pindi ...	75·6	2·9	2·5
	Average	114·50	3·50	3·16
1875 ...	Rawal Pindi ...	45·87	1·14	1·82

Location, &c.

II. Location, &c.—The head-quarters of this regiment have remained stationary at Pindi, but furnished detachments to Attock and Murree. Mr. Roe has no remarks to offer regarding the topography of the station in addition to those given in his last year's report. The heat is described as having been great at the commencement of the hot weather, and was almost unbearable during the months of June and July. The lines are the same as reported on last year, and they are said to have been in good repair, clean, and very healthy. The natural

Drainage.

drainage of the station and lines is very good, and even after the heaviest rainfall no surface water lies. A large tank has been constructed at the end of the lines into which the surface water runs, and the medical officer considers

Conservancy, &c.

it to have been a work of great utility. The "dry-earth" system was employed in the latrines, and answered very well; the water was of good quality and abundant; the bazaar supplies were all of good quality, and every care was taken to prevent under-feeding; the duty was light, and the men had 8 nights in bed.

Hospital.

XIV. Hospital.—Having fully described the new hospital in my report for 1874, I need here only remark that I have found it suitable in every respect for a native regiment; it is in very good repair, healthy, and raised well above the ground, and on this account easily kept clean. The out-offices and servants' houses are also in good repair. A pucka-built well and a dead-house are now in process of construction, and when finished will add much to the stability of the building.

Sickness, mortality and invaliding.

XV.—Sickness, mortality and invaliding.—Strength of the regiment—

Present	616·88
Absent	83·22
Total	700·10

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Rawal Pindi	1st Jan. ...	31st Dec. ...	531·42	240	5	10·5	45·16	·94	1·97
Detachment at Murree ...	26th March ...	20th June ...	58	8	...	·47	57·90	...	·81
„ „ Attock ...	28th May ...	19th Sept. ...	175·88	33	1	1·7	55·67	1·82	·96
„ „ Murree ...	13th Sept. ...	18th Nov. ...	57·62	2	...	·28	19·19	...	·48
Total ...	...	...	616·88	283	6	11·27	45·87	·97	1·82

Number of deaths in hospital 6; out of hospital 2; total	8;	per cent. of total strength ...	1·14
„ invalided	42;	„ „ ...	5·99
„ sent on sick leave	1;	„ „ ...	·14
„ of days spent in hospital 4,113; per admission ...	24·53;	per man of total strength ...	5·89
„ „ on sick leave 70; per man ...	70;	„ „ ...	·09
Total temporary loss of service per man of total strength ...			5·98

Principal causes of sickness.

XVI. Principal causes of sickness.—The principal causes of sickness during the year were as follows: malarious fevers, chest complaints, dysentery, boils, diarrhœa, and conjunctivitis; these diseases caused most of the admissions; but, as a whole, the type was very mild as compared with former years:

Digitized by Google

only one case of fever was complicated with pneumonia during the year. All the cases, with few exceptions, yielded easily to treatment, and no bad effects were left afterwards. I have been much struck with the marked improvement in the general health of the men and how much more rapidly they recover now than when in Peshawar, and this will be shown by the great diminution in the numbers admitted under "debility," and those who were so admitted were chiefly old soldiers who had suffered from repeated attacks of fever during their service; but even among these men, rest for a short time in hospital with general tonic treatment soon enabled them to recover their health, and the fact that only one man required sick leave during the year will of itself speak for the general health of the corps.

Mortality. *XVII. Mortality.*—Six deaths took place during the year: 5 at head-quarters, 1 on detachment duty, and 2 out of hospital, making a total of 8. Pneumonia caused 2, pneumonia complicated with fever 1, bronchitis 1, debility 1, and laryngitis 1. The case of 15*a* pneumonia was one in which the man caught cold while suffering from fever, and pneumonia setting in, ran rapidly to a fatal termination; the case of debility occurred in the person of a weakly man, and some internal cause (which could not be ascertained) was suspected of having induced this state. A *post mortem* examination in this instance would most probably have revealed the disease; but the friends of the man objected to one being made, and under these circumstances the commanding officer withheld his sanction. The remaining 3 deaths occurred in the persons of very weakly men after protracted illness; they present no features of interest. The death from laryngitis occurred at Fort Attock, and I regret being unable to give any particulars concerning it.

Epidemics. *XVIII. Epidemics.*—None.

Vaccination. *XIX. Vaccination.*—None of the men were vaccinated during the year, most of them being well protected either by inoculation or previous vaccination. I propose shortly inspecting all the recruits and younger men, and vaccinating them as soon as the weather becomes milder. The only case of small-pox occurred in my own person. I have three good marks of vaccination, and to this I attribute the mildness of the attack from which I suffered, as altogether I was only ill for 18 days. I had attended some bad cases amongst coolies during the camp of exercise in December 1874, and, about a fortnight afterwards, was taken ill, but was able to return to my duty in a month from the commencement of the illness, being then quite convalescent.

Remarks. *XXI. Remarks.*—In conclusion, I have only to add that from my observations with reference to the health of the men, I consider that they are in every way improved since leaving Peshawar, the class of men obtained as recruits being very much better than formerly; their health and physique good, and they are in every way fitted for any duty as soldiers which they may be called upon to perform.

Inspection. Mr. Banister, Deputy Surgeon-General of the Rawal Pindi Circle, reports that this regiment had greatly improved in health and strength since its arrival at Pindi in 1874, and furnished a smaller number of admissions into hospital during the year than any other regiment in the circle. He found the lines, which he considers to be equally faulty as those of the 14th Sikhs, clean and orderly, and without any overcrowding. All the arrangements in hospital bore evidence of great care and attention, and could not have been more satisfactory; there were no deficiencies of any kind observable. Mr. Banister states that the recruits (86) were particularly good, and above the usual standard.

Divisional staff hospital, Rawal Pindi. *Divisional staff hospital, Rawal Pindi.*—This institution was inspected by Mr. Banister on the 4th of November 1875, who reports that the building was in very good repair, the equipment tolerably complete, and the premises clean and orderly.

Lock hospital, Rawal Pindi. *Lock hospital, Rawal Pindi.*—Mr. Banister inspected this hospital on the 4th November 1875, and of 15 women under treatment, found that 9 suffered from primary syphilis, and 6 from gonorrhœa and abrasions. The building and its enclosure were clean and orderly, and all the arrangements perfectly satisfactory. Up to the date of inspection, the average number of registered prostitutes was 92, and from this number there had been 252 admissions, *viz.*, gonorrhœa 119, primary syphilis 77, leucorrhœa 20, abrasions 34, and condylomata 2; these numbers were in excess of the admissions of 1874, but are accounted for by the increased strength of the European garrison during the camp of exercise, and the difficulty in repressing promiscuous intercourse. Mr. Banister observes that Dr. Roe's annual report exhibits how very unequally different corps were affected, and favors the suspicion that it was owing in a great measure to the slackness or otherwise of regimental surveillance.

Statistics.

Attock Garrison. *Attock Garrison.*—The native portion of the garrison is relieved every three months, and consists of two companies furnished in rotation by the regiments at Talagang, Jhelum and Rawal Pindi. The men are generally very sickly, and suffer during the autumn and winter months from periodic fevers

Digitized by Google

and bowel complaints. On the date of his inspection, the 18th November 1875, Mr. Banister found the old barracks, which were overcrowded and badly ventilated, still in occupation. The hospital was in excellent order and well supplied with every requisite.

Lock hospital, Attock.

Lock hospital, Attock.—The premises were found to be clean and orderly by Mr. Banister on the date of his inspection—the 18th of November. A new latrine and an ablution-room had been added since his last inspection. There were no patients under treatment in hospital on the 18th November; but during the year there had been 22 admissions, *viz.*, 6 cases of primary syphilis and 16 of gonorrhœa, from a strength of 9 women borne on the register. Registration is said to be enforced over an area of 3 miles, including Kyrabad on the Peshawar side of the Indus, so that the number of prostitutes on the register, only 9, may be considered a very insignificant number. The average strength of the European portion of the garrison was 180, and of these, 17 contracted chancre, 5 secondary affections, and 20 gonorrhœa; however, of these 42 cases, but 26 were contracted at Attock, and the remainder on the line of march or at other stations. The results obtained from the working of this hospital were not so favorable as in 1874.

Area of registration.

5th Bengal Cavalry—Jhelum.

Surgeon J. C. Shircore submitted the report.

Medical Officers.

I. Medical Officers.—Surgeon Palmer was in charge of the regiment from 1st January to 6th December; Surgeon Harvey from 7th to 26th December; Surgeon Shircore from 27th to end of the year 1875.

Location and movements.

II. Location and movements.—The regiment was stationed at Jhelum from 1st January to 20th October; from 21st October to 3rd December on the line of march to Delhi, from 4th December to the end of the year at the camp of exercise, Delhi, leaving a detachment ordered to proceed to Nowgong, consisting of 76 men, from 6th December 1875.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Nowshera, Dec. 1868, from Sitapur ...	222	3·5	4·7
1871 ...	Ditto ditto ...	200·9	1·6	4·7
1872 ...	Jhelum, Nov. 1871 ...	161·9	1	4·9
1873 ...	Ditto ditto ...	45·5	1·1	1·5
1874 ...	Ditto ditto ...	69·47	·87	1·78
	Average	139·95	1·61	3·51
1875 ...	Jhelum	127·23	·87	2·43

Topography.

III. Topography.—Dr. Palmer, who had the charge of the regiment at Jhelum, states that the subsoil water-level rises during the hot weather as the river rises, but that no increase of sickness is traceable to this change.

Meteorology. lines, &c.

There was nothing under the heads of meteorology, lines, drainage, conservancy water-supply, &c., which called for any special remark; and Surgeon Shircore's report regarding these points was, as might be expected from the short time he was in charge of the regiment during 1875, a very meagre one.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	384·32
Absent	73·81
Total	458·13

Station.	Period. From	Period. To	Strength.	Total numbers of: Admissions.	Total numbers of: Deaths.	Daily average number of sick.	Per cent. of strength per annum: Admissions.	Per cent. of strength per annum: Deaths.	Per cent. of strength per annum: Daily average sick.
Head-quarters at Jhelum, and camp of exercise, Delhi.	1st Jan. ...	31st Dec. ...	371·37	468	3	8·89	126·03	·54	2·39
Detachment at Jhelum ...	1st Jan. ...	10th Feb. ...	73	5	...	1·8	60·98	...	2·46
„ at Nowgong ...	6th Dec. ...	31st Dec. ...	76	16	...	2·5	295·51	...	3·29
Total ...	.....	.....	384·32	489	3	9·35	127·23	·53	2·43

Number of deaths in hospital 2; out of hospital 2; total 4; per cent. of total strength	...	·87
„ invalided ... ... 12; „ „	...	2·61
„ of days spent in hospital 3,474; per admission 7·10; per man of total strength	...	7·58
Total temporary loss of service per man of total strength	...	7·58

Digitized by Google

XVII. Principal causes of mortality.—One died 15th pneumonia and the other of peritonitis; the two who died out of hospital, one supposed phthisis and one of heart disease in the lines. Mortality.

22nd (Punjab) Regiment, Native Infantry—Jhelum.

Year.	Station.	Per cent. of strength		
		Admissions.	Deaths.	Daily sick.
1870 ...	Fort William, Dec. 1869	230·9	1·1	6·2
1871 ...	Dacca and Barrackpore, March 1870 ...	255·6	1·3	6·7
1872 ..	Jhelum, April 1872 ...	284·2	5·1	8·5
1873 ...	Ditto ditto ...	99·	·7	2·8
1874 ...	Ditto ditto ...	66·6	·58	2·1
	Average ...	187·26	1·76	5·26
1875 ...	Jhelum	86·53	·43	2·27

I. Medical Officers.—Surgeon-Major A. J. Dale was in charge of the regiment during the year; but for the first seven weeks, *viz.*, from 1st January to 7th February, Surgeon D. P. Palmer was in charge of the head-quarters at the camp of exercise, Rawal Pindi, Surgeon-Major Dale remaining with the depôt at Jhelum. From 5th September to 31st December, a detachment of the regiment was at Attock under charge of Staff Surgeon-Major A. Thompson. Medical Officers.

Surgeon-Major A. J. Dale submits the annual sanitary report of the regiment.

II. Location and movements.—Jhelum has been the station of the regiment for the year; the head-quarters were, however, at camp of exercise, Rawal Pindi, from 1st January to 7th February. Location and movements.

All that relates to the topography, climate, lines and barracks, drainage, conservancy, water-supply, diet, clothing, duty and employment, have been described in previous reports, and Mr. Dale has nothing further to add respecting them. Lines, Barracks, &c.

XIII. Marches and service.—The beginning of the year found the head-quarters of the regiment still at the camp of exercise, Rawal Pindi, whence they commenced their march towards Jhelum on the 1st February, arriving on the 7th February. The camp, its climate, nature and duties have been already described. Since its return to Jhelum the regiment has not moved. Marches and service.

XIV. Hospital.—The hospital was fully described in reports of past two years; the daily number of sick not having been large, the accommodation has been ample. Fuel has been allowed during the cold months at the rate of 1 maund and 11 seers per day, and is a great boon. Kerosine oil for lighting would be a great improvement on the country oil now supplied for the lamps, and would not be much more expensive. Each patient brings his own bedding; and by a grant from the officer commanding, a quantity of sheets have been provided for the use of the sick; each man receives one on admission, which is changed as often as necessary. The hospital is in fair repair; and, at last, houses for the accommodation of the hospital assistant and servants have been commenced, and will be finished in March. Thus, tardily, a great hardship, alluded to in former reports, will be relieved. Hospital.

XV. Sickness, mortality, and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	628·65
Absent	68·68
Total ...	697·33

Stations.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Jhelum and Camp of Exercise, Rawal Pindi.	1st Jan. ...	31st Dec. ...	556·4	451	1	11·05	81·05	·18	1·98
Depôt at Jhelum ...	Ditto ...	Ditto ...	144·	3·	...	·76	20·01	...	·52
Detachment at Attock ...	5th Sept. ...	Ditto ...	130·1	90	...	6·	213·98	...	4·61
Total ...	...	...	628·65	544	1	14·27	86·53	·16	2·27

Number of deaths in hospital 1; out of hospital 2; total 3;				per cent. of total strength	0·43
„ invalided	22;	„	„		3·15
„ sent on sick leave	10;	„	„		1·43
„ of days spent in hospital 5,212;	per admission 9·58;	per man of total strength			7·47
„ „ on sick leave 802;	per man 80·2;	„	„		1·15
Total temporary loss of service per man of total strength					8·62

Digitized by Google

The year, on the whole, has been a healthy one; and though the returns show an increase in the number of admissions over 1874 of 134, the cases have for the most part been slight and of short duration, and the health of the regiment has really been better. The increase over last year is due principally to a larger number of cases of intermittent fever, which disease during September, October and November, was very prevalent, but a few cases excepted, of no severity and uncomplicated, a marked feature being the absence of pneumonic complication, in former years so noticeable and so fatal. The average daily sick has been nearly the same, *viz.*, 14·27, as against 13·12 of 1874, and would have been less but for the detachment at Attock, whose percentage of admissions rose to 213·93 against a percentage at head-quarters of 118·16 during the same period. Last year only four deaths occurred, and this year the mortality is even smaller, *viz.*, 3, of which number one man died in hospital and two out. Twenty-two men were invalided in 1875 against 34 of previous year.

Principal causes of sickness.

XVI. Principal causes of sickness.—The majority of the admissions are, of course, due to diseases resulting from climatic influence; of these, malarial fevers head the list, giving nearly half the admissions, or 258 out of a total of 544. Of the ague cases, 240 are credited to the quotidian variety, 17 to the tertian, and 1 to the quartan. Diseases of the digestive system follow next with 59 cases, of which 34 are due to dysentery and 10 to diarrhœa; one of the former terminated fatally. Thirteen cases of diseases of the respiratory system are shown, of which three were pneumonia; these latter were severe, and fear was entertained as to recovery of two, but all eventually pulled through and were discharged cured. Of rheumatism, there were 19 cases, and of syphilis 22; only one case of gonorrhœa applied for treatment. One case of phthisis occurred in a Pathan, and ran a very rapid course; the man at his urgent solicitation was allowed to go on leave to his home, where he has probably died ere this.

Principal causes of mortality.

XVII. Principal causes of mortality.—Only three deaths occurred,—one in and two out of hospital; the former was a case of acute dysentery. The men who died at their homes had been sent there on sick leave,—one a very old native officer, whose health was quite broken down, and who would have been invalided at next annual committee, from fever, and the other a havildar, from splenitis followed by repeated attacks of fever; he, too, was old, and only waiting for the committee.

Epidemics.

XVIII. Epidemics.—Great fears were entertained at one time of a cholera invasion. The disease was in the province. For a time it did not cross the Beas, but in September, cases were reported at Amritsar; happily it progressed no further towards Jhelum and Pindi. At the time the disease penetrated to Amritsar, the country between this and there was inundated for miles in all directions; whether its progress was arrested by these floods is only conjecturable, but it was by many supposed to be so; certain it is that the disease did not cross the tract inundated; the passage of travellers, and more specially of such travellers as were likely to convey it, was much impeded and for a time quite arrested, which of itself was a partial safe-guard. Certain precautions were adopted, but the orders of Government were against any severe quarantine regulations. A native doctor was, however, placed in the far bank of the river to examine any cases of illness and to detain them, if needful; and as the bridge was down, and travellers could only cross by ferry, this became more practicable. As regards cantonments, all men and camp-followers returning from any infected district were placed in quarantine for a time. The sanitary condition of the station was especially looked after, and certain sanitary regulations were rigidly enforced. No case occurred, nor was any anthentic case reported from the district; though one, and that fatal, was said to have taken place at Pind Dadan Khan.

Vaccination.

XIX. Vaccination.—Forty cases of vaccination were performed during the year successfully. Recruits not protected are invariably vaccinated on joining. The regiment is well protected.

Special observations and remarks.

XXI. Special observations and remarks.—In July or August last a trial was ordered to be made of the Darjeeling cinchonidine and cinchona alkaloid. Though an indent was immediately submitted, the medicine did not unfortunately arrive till towards the end of November, when the number and severity of the cases of intermittent fever had considerably abated; the opportunity was therefore lost of that extended trial which might have been given had the supply been received early in September, during which month, and October and November, ague was very prevalent. I have, however, been enabled to make a trial of the cinchonidine in about 30 or 40 cases. The results have been most satisfactory, and as far as I am able to judge at present, the remedy seems little, if at all, inferior to quinine, and will be found in the generality of cases to be a perfect and efficient substitute for that expensive drug. The cases treated have been the ordinary run of those that come to a native regimental hospital—some slight, some severe, and in all a cure resulted more or less rapidly; slight cases only requiring a dose or two, more aggravated ones a little longer perseverance. The mode of administration and doses are exactly the same as those adopted in giving quinine; its disagreeable effects, such as singing in the ears, headache, deafness, seem much the same as those resulting from that drug, and its therapeutical properties identical. I have not used any quinine in hospital since I have had the cinchonidine.

Inspection.

Mr. Banister made his medical and sanitary inspection of this regiment on the 18th of October 1875; he found the barracks in good repair, well

Digitized by Google

ventilated and spacious; the hospital also was in good order, and thoroughly equipped; the arrangements were satisfactory.

23rd (Punjab) Regiment, Native Infantry—Jhelum.

I. Medical Officers.—Surgeon-Major E. Taylor was in medical charge of the regiment throughout the year, and has submitted the annual sanitary report. Surgeon-Major A. J. Dale was in charge of a detachment at Jhelum from 1st of January to 5th February. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Rawal Pindi, August 1868, from Peshawar	90·7	1	4·2
1871 ...	Ditto ditto ...	55·6	1·2	2·5
1872 ...	Ditto ditto ...	64·7	·5	2·2
1873 ...	Jhelum, February 1873	58·9	·2	1·9
1874 ...	Ditto ditto ...	75·32	·72	2·3
	Average ...	69·04	·92	2·62
1875 ...	Jhelum	89·69	·85	2·89

II. Location and movements.—The head-quarters of the regiment was at the camp of exercise at Rawal Pindi from 1st to 31st of January; on the march from Rawal Pindi to Jhelum from 31st of January to 5th of February; at Jhelum from 5th of February to 31st of December. A detachment marched for Attock on the 22nd of December. Location and movements.

III. Topography.—The topography of the station and surrounding country has been described in previous army reports; there does not seem to have been any meteorological condition which calls for special remarks. A description of the lines was given in the report for 1873; a later measurement gives 425 cubic feet of breathing space to each unmarried man in barracks. The ventilation of the barracks was sufficient. The "night soil" of the station is now buried within cantonment limits, and is said to be effectually disposed of. Surgeon-Major Taylor is unable to report that the latrine system has worked well during the year, and states that the principal cause of its failure was want of sufficient establishment. The general sanitary conditions of the lines and station were considered to have been in a satisfactory condition. Water-supply is said to have been good and ample, and care was taken to prevent any pollution of it. Food was cheap throughout the year, and vegetables were generally procurable at moderate rates. The medical officer states that the men do not under-feed themselves. No change apparently has been made in the clothing of the sepoys since 1870. Ammunition boots are in wear for most duties, but native shoes are said to be sometimes worn. The average weight each sepoy carries, including arms, accoutrements, pioneer tools, &c., is from 28 to 29 lbs. on service; the extra ammunition, great coat, water, &c., would bring the weight up to 40 lbs. The duties have not been heavy, and each man had upwards of 6 nights in bed on the average. Topography. Lines. Conservancy. Water-supply. Clothing. Duty.

XIII. Marches and service.—The regiment was at the camp of exercise, Rawal Pindi, from the 1st to the 31st of January, and on the march to Jhelum from the 31st of January to the 5th of February. At the camp there was no night work excepting the usual guards. The march occupied six days, two of which were wet and cold. Marches and service.

XIV. Hospital.—The hospital is in good repair, and the accommodation is ample: it has a cubic space of about 112,330 feet; it is lighted by oil-lamps; there is only one small fire-place which is not sufficient for the proper warming of the whole building. There are blankets in store for the use of those who do not possess sufficient bedding. The latrine is in good repair, but is badly situated, and faulty in construction. Houses for hospital assistants and servants are now being built, and will be ready in two or three months. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	628·80
Absent	70·50
Total	699·30

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total numbers of. Admissions.	Total numbers of. Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Per cent. of Strength per annum. Deaths.	Per cent. of Strength per annum. Daily average sick.
Head-quarters at Rawal Pindi and Jhelum ...	1st Jan. ..	31st Dec. ...	607·4	556	3	17·72	91·54	·49	2·90
Detachment at Jhelum ...	,, ,, ...	5th Feb. ...	156·36	8	...	4·14	51·71	...	2·64
,, at Attock ...	22nd Dec. ...	31st Dec. ...	124·00	...	...	...	...	...	...
Total ...	...	...	628·80	564	3	18·19	89·69	·48	2·89

Number of deaths in hospital 3; out of hospital 3; total	6;	per cent. of total strength	...	·85
,, invalided	41;	,, ,,	...	5·86
,, sent on sick leave	4;	,, ,,	...	·57
,, of days spent in hospital 6,640;	per admission 11·77;	per man of total strength	...	9·49
,, ,, on sick leave 440;	per man 110;	,, ,,	...	·63
Total temporary loss of service per man of total strength			...	10·12

There was more sickness than in the previous year; in 1874, the total average strength present was 624·01, the daily average number of sick was 14·67; in 1875, the total average strength present 628·80; daily average number of sick 18·19.

Principal causes of sickness.

XVI. Principal causes of sickness.—Nearly two-thirds (383) of the total treated were cases of ague, nearly all of the quotidian variety; most of the cases were of a mild character, and yielded readily to treatment. Twenty-eight cases of dysentery were treated; many of the cases appeared to be due to errors of diet, and yielded readily to castor-oil and appropriate food. Thirty-one cases of the diseases of the eye came under treatment, 24 of which were for conjunctivitis. There were 28 cases of bronchitis, two being capillary and of the tubes generally, one of which proved fatal; all the other cases did well. Fifteen men were treated for boils. Ten

Syphilis.

cases of primary syphilis came under treatment; only one of these was admitted a second time; the man was then found to be suffering from an eruption, chiefly papular; he was put under a course of mercury and made a good recovery. Ten cases of pneumonia came under treatment, two of which proved fatal, six were discharged cured, and two remain under treatment. Two of the cases occurred early in February, immediately after the regiment arrived at Jhelum from the camp of exercise; one of these ended fatally during two days of the march. The weather was cold and stormy. I have no doubt in both cases exposure to cold was the cause of attack. Two camp followers came under treatment at the same time. In March, six cases of pneumonia came under treatment; in all probability the cause in these cases was exposure to night-air, a noxious atmosphere, excitement, and want of proper sleep.

The men of the regiment gave a nautch on the occasion of the Holee festival, which was kept up incessantly night and day for eight days; a large marquee made of tents was erected; this was crowded night and day, and in it the atmosphere was close and foul to a degree; there is no reason for supposing the men attacked by pneumonia were more exposed than others to those influences; but all were attacked during or immediately after the Holee festival. One or two camp followers also suffered from pneumonia; there was only a range of temperature at the time of from 12 to 15 degrees. One case was admitted on November 1st for ague, when pneumonia supervened; the other case was admitted in December; both men state that they had had occasion to get out of their warm beds during the night, and found themselves chilled by exposure to night-air whilst nearly naked, and that they became ill from that time. With the exception, perhaps, of malarial toxæmia there were no inter-current affections in any of the pneumonia cases. There were no serious surgical cases. Two cases of remittent fever were treated; both were severe and of low type, and one was complicated with scurvy; both eventually did well. The diseases not mentioned were devoid of interest.

Principal causes of mortality.

XVII. Principal causes of mortality.—Six deaths occurred during the year,—one from syncope on parade, two in head-quarters hospital from pneumonia, and one from capillary bronchitis. Two men died at their homes, one whilst on sick leave, from bronchitis; the other man is said to have died from remittent fever whilst on furlough.

Epidemics.

XVIII. Epidemics.—In April, May and June there was an epidemic of measles in the station, city and district, chiefly amongst children; four men of the regiment suffered from it; the cases which first occurred were isolated, but the measure proved useless. There was no cholera in the station or city. Whilst there was cholera in the Punjab, as a precautionary measure, men returning from infected districts were put in quarantine for seven days before being allowed to enter the lines.

Vaccination.

XIX. Vaccination.—Sixty-seven men of the regiment were vaccinated during the year; sixty-four successfully. Sixty-four children were also successfully vaccinated. The regiment is thoroughly protected.

Inspection.

This regiment was inspected by Mr. Banister on the 18th of October 1875; he reports that there had been more than usual sickness during the three preceding years, but it was of no great severity, as only three deaths occurred in hospital; an epidemic of measles, affecting numbers of the

Digitized by Google

children and two of the men, continued throughout April, May, and June. Mr. Banister states that he found the lines much overcrowded, especially the sections occupied by the married men, and that, unless separate accommodation is provided for the women and children, the evil must continue. The hospital was in very satisfactory order, but needed additional stoves or fire-places. Medicines, &c., were sufficient and ample for the proper treatment of the sick.

17th Bengal Cavalry—Sialkot.

I. Medical Officers.—Surgeon-Major H. Potter, M. D., was in medical charge of the regiment throughout the year, with the exception of two months when on privilege leave. Dr. Potter has written the sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Sitapur, July 1869, from Barrackpore ...	126·6	·8	3·5
1871 ...	Ditto ditto ...	153·1	·4	4·8
1872 ...	Sialkot, March 1872 ...	167·1	1·	5·2
1873 ...	Ditto ditto ...	157·1	·4	5·4
1874 ..	Ditto ditto ...	154·5	·4	5·6
	Average ...	151·68	·60	4·90
1875 ...	Sialkot ...	177·11	...	6·89

II. Location, movements, &c.—The regiment was stationary at Sialkot during the year. A topographical description of the station has been given in previous reports. Under the head of "meteorology" there was but little of any unusual interest; the heat is described as having been great, but the heavy rains of July, August and September reduced the temperature considerably; the rainfall was 38 inches against 27 inches in 1874. During the heavy rains many houses in the lines fell in, and the discomfort and loss of property were considerable; the damage done was, however, soon rectified. No special remarks are required regarding the drainage or conservancy, which are in a satisfactory state. The water-supply, food and clothing were all good. The duty was in no way excessive, and the men had an average of 11 nights in bed. Location, movements, &c.

XIV. Hospital.—The hospital was described in previous reports, one-half (sometimes the eastern, sometimes the western), was in possession of the Department Public Works during the year. Fire-places were being erected in each ward; but up to the close of the year, they were not ready for use. Quarters for medical subordinates, according to the standard plan, have been built, but they have not been handed over for occupation. Fires have been sanctioned for the hospital, but, as above-mentioned, the fire-places were not ready. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	... 367
Absent	... 87
Total	... 454

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Sialkot ...	1st Jany. ...	31st Dec. ...	367	650	...	25 30	177·11	...	6·89

Number invalided	20;	per cent. of total strength	... 4·40
sent on sick leave	35;	„ „	... 7·70
of days spent in hospital	9,237; per admission 14·21;	per man of total strength	... 20·34
„ on sick leave	3,750; per man 107·15;	„ „	... 8·26
Total temporary loss of service per man of total strength			... 28·60

Digitized by Google

Principal causes of sickness.

XVI. Principal causes of sickness.—The following table shows the diseases which caused admission into hospital during 1875, and a comparison is made with those of 1874 :—

Diseases.	1874.	1875.
Fevers	144	150
Digestive diseases	100	119
Accidents	85	123
Rheumatic affections	55	69
Respiratory „	40	28
Cutaneous „	55	72
Eye „	24	25
Cellular tissue „	20	21
Nervous „	14	11
Venereal „	11	5
Scorbutic „	1	6
Other diseases	26	21
TOTAL ..	575	650

The type of disease during the year was very mild, but the admissions and daily average sick were high during and after the heavy rains. Of the 28 cases of respiratory disease, 24 were coryza. Not a single case of pneumonia or bronchitis was admitted.

Mortality.

XVII. Mortality.—No deaths occurred in the regiment either in or out of hospital during the year. The last death which occurred in this corps from disease took place in December 1873. The two deaths which occurred in 1874 were caused by accident.

Vaccination.

XIX. Vaccination.—Early in the year all the men were examined, and 11 were found whose protection was doubtful. Six of those were vaccinated, 3 had modified and 3 had good vesicles. Vaccination was commenced this cold weather with lymph received from Lahore, but the cases on which it was used turned out failures. A second supply was equally unsuccessful. The medical officer of the 9th Lancers kindly vaccinated three children with fresh lymph, but those cases also failed. However, on the 30th December, Dr. O'Leary, 1-6th Royal Regiment, successfully operated on 2 children, and on the 4th January 1876 he vaccinated 2 others with success. At present operations are being carried on.

Recommendations.

XX. Recommendations.—In August last I recommended that grey flannel, flannel shirts, and warm socks, such as are used in European regiments, should, if possible, be obtained for the use of all men willing to purchase them. Application was made to the Government Clothing Agent for the amount of flannel the men wanted, but unfortunately he had none in store. All the conditions affecting the health of the regiment were so satisfactory during the past year, that it was seldom necessary to make any recommendations.

Inspection.

This regiment was inspected by the Deputy Surgeon-General of the Lahore Circle on the 10th March 1876. The lines were in admirable order, and excellent as regarded cleanliness ; the drainage is described as having been good ; the buildings occupied by the men were of sufficient capacity, well ventilated, in good repair, and clean. The accommodation in hospital is stated to have been ample, and fire-places were to have been constructed in it; houses for the hospital assistants and medical pupils were in course of construction. All the arrangements for the proper care and treatment of the sick were satisfactory.

15th (The Ludhiana) Regiment of Native Infantry—Sialkot.

Medical Officers.

I. Medical Officers.—Surgeon-Major J. J. McDermott, M.D., was in medical charge throughout the year, excepting two months' absence on privilege leave. Surgeon-Major H. Potter, M.D., was in charge for August and September during the absence of Surgeon-Major McDermott on privilege leave. Surgeon-Major Potter was also in charge of a detachment of the regiment left behind at Sialkot, from the 25th October to the end of the year, when the headquarters marched to the camp of exercise, Delhi. Surgeon-Major J. J. McDermott, M.D., has written the sanitary report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Peshawar, Nov. 1869 ...	313·5	5	10·1
1871 ...	Ditto ditto ...	179·4	4·9	5·1
1872 ...	Ditto ditto ...	149·3	5	3·5
1873 ...	Sialkot, Feb. 1873 ...	81·4	3·3	2·6
1874 ...	Ditto ditto ...	64·4	1·72	2·5
	Average ...	157·60	3·98	4·76
1875 ...	Sialkot	101·56	·56	3·91

Digitized by Google

II. Location and movements.—The regiment was stationed at Sialkot from the 1st of the year to the 26th of October, up to which date it furnished no detachment, and made no movement out of the station, beyond those occurring on ordinary brigade manœuvres. From the 26th of October to the end of the year, the head-quarters was on the march to, and stationed at, the Delhi camp of exercise; and during the same period a detachment was stationed at Sialkot. Location and movements.

III. Topography.—As mentioned in previous reports, the station of Sialkot has been frequently and fully described by several medical officers previously stationed there, and the place generally and its surroundings have undergone no change of importance since then. Topography.

IV. Meteorology and Climate.—There was nothing very noteworthy in the climate of Sialkot during the year under report, excepting that the rainfall in the latter half of the year was unusually violent and heavy. The hot season was not severe, and on the whole the year appeared not to be unfavorable to the general health of the men. Meteorology and climate.

V. Lines and barracks.—The remarks under this head in last year's report still apply. The men's huts were greatly damaged by the heavy rains in the latter half of the year, and they were being repaired when the head-quarters marched from Sialkot. Lines and barracks.

VI. Drainage.—The drainage was satisfactory during the year, and I have no fresh remarks to make under this head. Drainage.

VII. Conservancy and latrines.—The remarks of last year apply to the subject under this heading for the year under report. The working of the dry-earth system during the year was, I consider, satisfactory. Conservancy and latrines.

XI. Duty and employment.—Same remarks as for last year. The men had seven continuous nights in bed during the year on the average. Duty and employment.

XIII. Marches and service.—On the 26th of October, the head-quarters marched, out of Sialkot *en route* to the Delhi camp of exercise, where it arrived on the 3rd of December, and continued to be stationed to the end of the year. It was attached to the 2nd Infantry Brigade of the third division, and was engaged in brigade and divisional manœuvres to the end of the year. The site occupied by the regiment from its arrival to the end of the year is close by the small village of Bussai, about five miles to the westward of Delhi. A low irregular range of sandstone hills on the eastward separates the divisional camp from Delhi, and the range, with broken intervals, sweeps round to the south of our position, separating us from the camp of the fourth division. Two canals,—the Nujufgurh and Western Jumna,—run across the north of our position, and the country in this direction and to the eastward is extensively flooded and swampy in the vicinity of the former canal. Excepting the sandstone hills to the east and south, the country generally is under cultivation, studded with villages, and to the north-east with gardens. Supplies are plentiful, and fruit and vegetables are easily procurable. The weather, from our arrival in camp to the end of the year, with the exception of a few days, was cold, rainless, and frequently cloudy. A keen north-westerly wind blew pretty constantly, though not with any strength, and it was during its cessation for a few days that the weather became temperately warm for the time of year. The nights were invariably cold, and warm clothing was a necessity. Up to the close of the year the general health of the regiment continued good, and the sick list was moderate; in fact, decreased from what it had been before arrival in the camp. Marches and service.

XIV. Hospital.—Last year's remarks are still applicable. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	638·03
Absent	...	...	...	...	66·18
			Total	...	704·21

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths	Daily average sick.
Head-quarters at Sialkot; to and at the Delhi camp of exercise. Detachment at Sialkot	1st Jany. 1875.	31st Dec. 1875.	605·29	596	2	21·81	98·46	·33	3·61
	25th Oct. 1875.	Ditto	176·94	52	...	16·92	157·5	...	9·60
Total	...	...	638·03	648	2	24·97	101·56	·31	3·91

Number of deaths in hospital 2; out of hospital 2; total 4; per cent. of total strength				...	0·56
„ invalided ...	...	...	11; „	„	... 1·56
„ sent on sick leave	...	...	30; „	„	... 4·26
„ of days spent in hospital, 9,115; per admission 14·06; per man of total strength				...	12·94
„ „ on sick leave 2,840; per man 94·66; „ „				...	4·03
Total temporary loss of service per man of total strength				...	16·97

The sickness was greater than during the previous year, especially in the months of August and September, and towards the close of the year. The mortality and invaliding were considerably less than for the previous year.

Digitized by Google

Principal causes of sickness.

XVI. Principal causes of sickness.—Malarious fever produced the greatest number of admissions, and prevailed most towards the end of the year, especially in the months of August and September. There was nothing unusual in its character, but the aggregate of cases was much larger than in the previous year. Rheumatism—subacute, chronic, synovial, and muscular—produced a great many more cases than during the previous year, but the disease was of the same ordinary character, and required no unusual treatment. Ulcers, boils, and abscesses gave more admissions than in the previous year, but there was nothing worthy of note in their character. Diseases of the respiratory system were not numerous. They were very much less in their total than last year, and, excepting a case of phthisis, all were sufficiently amenable to treatment. Accidents, as sprains, contusions, wounds, &c., in most cases the result of falls whilst doubling or jumping on regimental or brigade parades, and foot-sore, yielded, as usual, a good many cases, but none were very severe in their character. Diseases of the eye were neither numerous nor severe.

Principal causes of mortality.

XVII. Principal causes of mortality.—Two deaths occurred in hospital during the year, both from dysentery; one in the regimental hospital at Sialkot, and the other in the native general hospital of the Delhi camp of exercise. Two deaths occurred out of hospital during the year, both on sick leave. One man had been suffering from chronic pneumonic phthisis, and the other from scrofulous suppuration of the lower extremeties. The immediate cause of death in both cases is unknown, but in all probability was the result of the diseases above specified.

Epidemics.

XVIII. Epidemics.—No epidemic occurred amongst the men during the year; but a mild form of measles prevailed in the station and cantonments for a portion of the year.

Vaccination.

XIX. Vaccination.—Seven men of the regiment, whose protection was considered doubtful, were vaccinated in the early part of the year; but the resulting pustules or vescicles were very immature, and could not be considered, I think, in any degree vaccine pustules. The men, like nearly all grown-up people in the Punjab, had passed through small-pox when young, and hence the failure I expect. Sixty-eight children of sepoys and followers were also vaccinated, and of these 35 were successful, 25 doubtful, and 8 were failures.

Inspection.

Inspected by Dr. G. H. Ray, the Deputy Surgeon-General of the Lahore Circle, on the 10th April 1876, who states that the same complaints as regards want of accommodation, and the bare exposed state of the lines, still exist. Fire-places had been constructed in hospital since the last report, but their full value had not been experienced owing to the regiment having been at the camp of exercise. Huts for the hospital subordinates and servants still remain a want. On the day of inspection, there were 14 patients in hospital, and none of them were suffering from serious ailments.

19th (Punjab) Regiment of Native Infantry—Talagang.

Medical Officers.

I. Medical Officers.—Surgeon-Major T. S. Veale, M. D., was in charge of the head-quarters during the whole year; 3rd class hospital assistant Soonder Singh, detachment at Talagang, from 1st January to 11th February; Surgeon-Major Thomson, M. D., Garrison Surgeon, Fort Attock, detachment at Fort Attock, from 22nd February to 7th June; native medical pupil Inaiat Ahmed, detachment proceeding from Talagang to Mooltan, from 16th to 24th October; 1st class hospital assistant Mahomed Shuffer, left wing at Talagang, from the 1st November to the 31st December.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Peshawar, November 1868, from Allyghur ...	229·7	1·4	5·1
1871 ...	Ditto ditto ...	117·5	3·2	2·7
1872 ...	Talagang, October 1871 ...	114·8	·7	2·8
1873 ...	Ditto ditto ...	123·9	·5	2·
1874 ...	Ditto ditto ...	98·9	·72	1·7
	Average ...	136·96	1·30	2·86
1875 ...	Talagang	81·44	1·01	1·73

The annual sanitary report has been submitted by Dr. Veale.

Location, and movements.

II. Location, and movements.—The head-quarters and chief strength of the regiment at the commencement of the year formed part of the force collected at Rawal Pindi for instruction under Major-General McDonel, C. B. The camp broke up in the last week in January and corps returned to their respective cantonments. The regiment arrived at Talagang on the 12th February. A detachment of the strength of 150 protected the lines at Talagang during the absence of head-quarters at the camp of instruction. A detachment of two companies formed part of the garrison at Fort Attock from 22nd February to 7th June. A detachment, strength 104, under a European officer, marched from Talagang on the 16th of October and arrived at Mooltan on the 24th of the same month. The head-quarters commenced its march from Talagang on the 1st November and proceeded by regular marches to Mooltan, arriving on the 24th of November. The left wing remains at Talagang until regularly relieved by the 29th Regiment, Punjab Native Infantry.

Digitized by Google

III. Topography.—The reports for 1869 and 1870 may be consulted for a general description of the topography of Talagang and its vicinity. Topography.

IV. Meteorology.—The rigorous cold of a northern Punjab winter was realised in full by the regiment while it was encamped on high ground in an exposed position at Rawal Pindi during the cold season of 1874-75. The sufferings of the troops were greatly enhanced by the prevalence, particularly at nights, of the keen blighting winds which descended from the lofty mountains near at hand. The cold was very intense even during the windless nights, and plates of ice formed in the mussuks of water. The hot season at Talagang was principally remarkable for the prevalence of great heat during the months of June, July and August, the thermometer recording maximum within doors of 106,° or 10° higher than registered in 1873 and 1874. The amount of rain which fell was greatly below the average, and this was all the more noteworthy in connexion with the floods which visited the province generally, and the heavy rains which swelled the rivers and rendered them impassable for a time within a distance of 10 miles. Another interesting feature was the trifling dew-fall during September and October, as compared with the same months in 1873 and 1874 and as regarded in relation to the diminished prevalence of autumnal fever during the season of 1875. Meteorology.

V. Lines and barracks.—The lines at Talagang have remained without addition or alteration during 1875. They are commodious, well constructed, adequately drained, and fairly ventilated. They have been kept in good repair and admirable sanitary order. Lines and barracks.

VI. Drainage.—The drainage at Talagang, both artificial and natural, has been repeatedly described and is all that could be desired. The surface drains have been maintained in good order. The situation of the lines at Mooltan is objected to by one reporter as being below the level of the ground immediately adjacent to them, in consequence of which, they remain flooded for several hours after a heavy fall of rain; their position and surroundings have been amply detailed in the army sanitary reports between 1869 and 1873. Their drainage is generally pronounced to be very inadequate, though all are not agreed as to the causes of the insufficiency, local circumstances being brought into prominence by some, while others maintain that the general drainage of Mooltan is very defective, upon which point there can be no doubt. Drainage.

VII. Conservancy and latrines.—The regimental latrines and the conservancy arrangements at Talagang for the station have been described in former reports. They have worked satisfactorily. The open fields are generally preferred by the men, and in the case of a small community the practice is quite unobjectionable, the ordure being rapidly disposed of. At Mooltan the trench-system is in operation. The latrines are commodious, well situated, and the interior divided into a considerable number of compartments—an arrangement which adequately secures privacy. Conservancy and latrines.

VIII. Water-supply.—The sources, adequacy, and purity of the water-supply at Talagang, the sufficiency of the arrangements for washing clothes and for ablutions, are all mentioned in previous reports and are quite satisfactory. At Mooltan the water is derived from two capacious solid masonry wells surrounded with good stone copings. The well for the right wing is covered, and the ventilation of the interior adequately provided for by means of a grating about 2 feet in dimensions. The well in the left wing is not provided with a cover. There is no tank to receive waste water. The well for the use of the hospital is in a still less satisfactory condition; the stone coping around it is low, it is not covered, and the waste water collects in a sort of cess-pool and so becomes a ready source of contamination of the water-supply. Water-supply.

IX. Diet.—Talagang, with its neighbourhood, is a fruitful, grain-growing district and supports numerous heads of horned cattle. Supplies are therefore very abundant and cheap. The fresh vegetables fail during the autumn months on account of the difficulty in obtaining water; but this year potatoes were imported and sold at very reasonable rates. Scurvy occurred in a very mild form in some few of the men; the difficulty, indeed, consists in persuading the soldiers from the trans-Indus districts that fresh vegetables are a most essential and wholesome part of their diet; they pin their faith to the flesh forming foods and eschew fresh vegetables. The prevalence of tœnia among the Mahomedan soldiers in the regiment, as well as among the flesh-eaters of the civil community, which has been casually brought to notice while the victims were being treated for some other disease, seems to show that the cattle of the district are infested with the cyst. Diet. Scurvy.

X. Clothing.—The Transport Regulations so rigidly limit the amount of baggage to be taken by native soldiers on the line of march, that it was impossible for the men to provide themselves with a sufficiency of warm bedding and warm undress clothing to meet their requirements while exposed, for nearly four months, to the severe cold of a northern Punjab winter in camp at Rawal Pindi. Fresh supplies of straw could not compensate for the want of sufficiently warm bedding, and, accordingly, towards the end of the course, catarrhal affections had become extremely prevalent, and the exposure was manifestly affecting the health of the most elderly and less robust among the men. No doubt the men might have been screened from the keen blighting winds, which added so much to their sufferings at night, by raising a low wall around inside each tent—a plan which was carried out in the hospital tent with much advantage. The circumstances of the two cases, however, differed in this,—that while from the small number of patients in the hospital tent the amount of space per head was ample, on the other hand, the number of men which the regulations prescribe for a sepoys' tent implies rather close packing. The question had to be determined whether greater injury would accrue from the depressing effects of cold upon the vital powers generally and its specific irritant action upon the respiratory surfaces, or from the continued respiration of an atmosphere contaminated by an excess of carbonic acid and organic exhalations from the skin and lungs, which would necessarily result from crowding, associated with comparative exclusion of external air; and, having witnessed Clothing.

Digitized by Google

the disastrous effects upon the health of native communities once or twice before from the latter class of agencies, it was decided that the less alternative evil should be adopted. In all other respects the clothing has been adapted to the season of the year, the nature of the duty, &c.

Boots. The English pattern boot was worn on all duties at the camp, and the number of cases admitted for foot-bite was comparatively small; but with respect to this point, it needs be stated that only such lesions as actually disabled from duty were received into hospital, the milder cases being disposed of by giving the sufferers a few days rest in the lines till they were reported fit for duty by the native officers, and as regards these no estimate can be formed. Before commencing the march from Talagang in carrying out the annual relief, Colonel Ruggles caused the young men to go through a preliminary seasoning of their feet by wearing the ammunition boot on all duties for several weeks. It had the desired effect.

Duty, &c. *XI. Duty, &c.*—At Talagang the duties were very light; at Attock not severe. At Mooltan, A and B companies were at first greatly overworked, and when C and D companies, with head-quarters, arrived on the 24th November, the duties were still too severe, and, in order to mitigate them, the company at musketry had to suspend practice.

Exercises, Marches and service. *XII. Exercises.*—*Vide* report for 1873.

XIII. Marches and service.—The head-quarters remained at Rawal Pindi till the camp of instruction was broken up, and then returned to their permanent quarters at Talagang, proceeding *vid* Mundara, Julli and Chukwal. Two companies with a European officer left Talagang in February and proceeded by regular marches to Attock, where they formed part of the garrison up to the 7th June. Two companies with a European officer marched from Talagang on the 16th October, and proceeded by regular marches to Shahpore and thence by boats to Mooltan. The head-quarters and C and D companies, commencing their march from Talagang on the 1st of November and proceeding by regular marches all the way, arrived at Mooltan on the 24th of the same month. The route passed through an indescribably dreary and monotonous region of desert, the soil giving abundant evidence of considerable natural fertility by the abundance of the crops grown on the small plots of land which had been redeemed from the waste and brought under cultivation by means of well-irrigation. The supplies furnished were of average quality; the water generally very impure from the presence of organic and saline substances. The road takes the traveller through the lowest ridges of the salt range for the first three days, and is quite impassable for wheeled carriages; during the remainder of the distance it is very good, though scarcely any traffic is seen upon it.

Hospital. *XIV. Hospital.*—The hospital has been very fully described in the reports between 1869 and 1874. The insufficiency of out-houses for the servants, and the want of quarters for the hospital assistants, have not been remedied. A set of six excellent blankets was supplied to the hospital at Rawal Pindi in camp, and eight well stuffed mattrasses and pillows were also subsequently contributed by Colonel Ruggles for the comfort of the sick. The hospital at Mooltan is roomy and well constructed, sufficiently ventilated, and well lighted. It is provided with two large fire-places, for one of which fuel was sanctioned during the current winter. The out-houses are here also of a very inferior description, and the accommodation is insufficient. The hospital assistants' quarters are not comfortable, are doorless and windowless; they have the objectionable feature, too, of being too far removed from the hospital.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	616·4
Absent	74·4
Total	690·8

Station.	Period. From	Period. To	Strength.	Total number of: Admissions.	Total number of: Deaths.	Daily average number of sick.	Per cent. of Strength per annum: Admissions.	Per cent. of Strength per annum: Deaths.	Per cent. of Strength per annum: Daily average sick.
Head-quarters encamped at Rawal Pindi ...	1st Jan. 1875	4th Feb. 1875	554·65	45	...	10·97	84·65	...	1·97
Head-quarters march to Talagang	5th Feb. 1875	11th Feb. 1875	553·00	14	...	13·14	131·99	...	2·37
Head-quarters at Talagang	12th Feb. 1875	31st Oct. 1875	575·42	280	4	8·46	67·82	·96	1·47
„ march to Mooltan	1st Nov. 1875	23rd Nov. 1875	253·91	16	..	3·73	100·03	...	1·46
Head-quarters at Mooltan...	24th Nov. 1875	31st Dec. 1875	390·13	46	...	8·73	113·30	...	2·23
Detachment at Talagang ...	1st Jan. 1875	11th Feb. 1875	150·5	12	...	2·11	63·47	...	1·40
„ at Fort Attock	22nd Feb. 1875	7th June 1875	113·00	21	...	1·43	64·12	...	1·26
„ march to Mooltan	16th Oct. 1875	24th Oct. 1875	124·	2	...	·55	65·33	...	·44
Detachment at Mooltan ...	25th Oct. 1875	23rd Nov. 1875	125·	15	...	3·00	151·10	...	2·40
Left Wing at Talagang ...	1st Nov. 1875	31st Dec. 1875	285·93	51	1	8·13	106 74	2·03	2·84
Total ...	...	...	616·4	502	5	10·7	81·44	·81	1·73

Number of deaths in hospital 5; out of hospital 2; total	7;	per cent. of total strength	...	1·01
„ invalided	31;	„ „	...	4·48
„ sent on sick leave	3;	„ „	...	·43
„ of days spent in hospital 3,937;	per admission 7·84;	per man of total strength	...	5·69
„ „ on sick leave 297;	per man 99;	„ „	...	·43
		Total temporary loss of service per man of total strength	...	6·12

Digitized by Google

XVI. Principal causes of sickness.—Malarious fevers contributed the largest figure to the total of admissions during the year, although they prevailed to a less extent than in the years 1873 and 1874. Principal causes of sickness.

XVII. Principal causes of mortality.—One death occurred from acute general bronchitis accompanied with intense congestion of the lungs; the general health was greatly impaired by hypertrophied spleen and leucocythæmia. The second casualty resulted from double pleuro-pneumonia in a young man who had a pulse of 150°, very small and weak on the day following the initial rigor. The rigors were in this case several times repeated with each extension of the inflammatory process in the lungs. The third death from acute pneumonic phthisis. The fourth death from remittent fever, the fatal event being immediately determined by acute capillary bronchitis. One death occurred on the last week of November in the left wing hospital it is returned as ague, but no particulars as to the immediate circumstances which caused the death have been supplied. The sixth death occurred from general debility and anasarca in a young man who had proceeded on leave to his home on medical certificate. The change did not benefit him as was anticipated, and he failed to avail himself of medical aid, which was within his reach. The seventh death was reported from the man's home; the cause was not certified. Principal causes of mortality.

XVIII. Epidemics.—None. Epidemics.

XIX. Vaccination.—Vaccination was performed by a native inspector, under the orders of the Superintendent, Dr. Massy, among a considerable number of children in the lines and officers' compounds. The success was excellent. The men are, with few exceptions, protected by natural or inoculated small-pox. Vaccination.

XX. Recommendation.—An examination was ordered of the married quarters upon the report of the medical officer that enteric fever existed. The committee reported the houses and private latrines clean and in good order. Recommendation.

XXI. *Special observations.*—A reference has already been made to the desirability of relaxing the transport regulations in the case of native soldiers who have to undergo exposure in camp during the rigors of a Northern Punjab winter, to enable them to carry a sufficiency of warm bedding and clothing. Special observations.

Deputy Surgeon-General Banister inspected this regiment on the 23rd October 1875, just before it commenced the march to Mooltan; he reports that the regiment was stationed at Talagang for nearly four years, and enjoyed excellent health. The lines could not have been in better order, and the hospital and all its arrangements were suitable and good. Mr. Banister reports that accommodation for the hospital establishment required improvement, as the hospital assistants still occupied rooms in the hospital building, and there were but four rooms for twelve servants. Inspection.

PESHAWAR DISTRICT.

(INCLUDING THE STATIONS OF PESHAWAR, NOWSHERA, AND THE DOABA OUTPOSTS.)

Average daily strength present during the year	...	Cavalry	1157·39	Infantry	3049·40
Average daily sick per cent. of average strength	...	„	4·60	„	4·84
Ratio of mortality per cent. of average strength	...	„	1·39	„	2·72

8th Bengal Cavalry—Peshawar.

I. Medical Officers.—The following officers were in medical charge of the regiment from and to the dates specified:— Medical Officers.

Surgeon G. Watson, from 1st to 27th January; Surgeon-Major E. O. Tandy, from 27th January to 10th May; Surgeon Keefer, from 11th May to 15th July; Surgeon J. McConaghey, from 16th July to 25th August; Surgeon Robinson, from 26th August to 11th October; Surgeon-Major E. O. Tandy, from 12th October to 31st December.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Meerut, Feby. 1870 ...	64·1	·8	2·7
1871 ...	Ditto ditto ...	80·9	1·3	3·
1872 ...	Ditto ditto ...	101·9	·6	3·3
1873 ...	Ditto ditto ...	155·6	·8	4·3
1874 ...	Peshawar, March 1874	134·07	1·1	3·5
...	Average	107·31	·92	3·36
1875 ...	Peshawar	163·31	·88	4·53

Digitized by Google

Surgeon-Major E. O. Tandy reports as follows:—

Location and movements.

II. Location and movements.—Head-quarters at Peshawar from 1st January till 31st December. The following detachments were furnished from head-quarters to the Doaba outpost as follow:—

Fort	Michni	from the	1st January to 31st January.
,,	,,	,,	28th February to 31st March.
,,	,,	,,	30th April to 31st August.
,,	,,	,,	31st October to 31st December.
,,	Shabkadar	,,	31st January to 28th February.
,,	,,	,,	31st March to 30th April.
,,	,,	,,	31st August to 31st October.
,,	,,	,,	30th November to 31st December.
,,	Mackeson	,,	29th November to 30th December.
,,	Abazai	,,	27th November to 31st December.

Meteorology.

IV. Meteorology.—There were no peculiar meteorological phenomena observed during the year, except an unusually severe earthquake at 1 A. M. on the 12th December. The thermometer reached its maximum 102° in July, its minimum 43° in January. The maximum range of temperature of 22° occurred in March and October; the minimum 12° in September. The observations were taken from a thermometer in the dispensary, hanging against a partition wall.

Lines, barracks and huts.

V. Lines, barracks and huts.—No alterations have been made in the huts during the year; they are in good repair. A large number of trees have been planted and several tanks have been made pucca.

Drainage.

VI. Drainage.—From the natural declivity of the ground on which the lines are built, the surface drainage is very good indeed. The ground is kept remarkably clean and dry.

Conservancy and latrines.

VII. Conservancy and latrines.—The general conservancy is good. The latrines are those described last year; they are well looked after and kept clean; but as no gumlahs or receptacles of any description are supplied, there necessarily is always a bad smell from the ground; they are, however, separated from the lines by a public road and the parade ground. The latrines in the lines, of which there are several for native officers and sowars with families, are carefully and regularly inspected and are never offensive.

Water-supply.

VIII. Water-supply.— The water-supply is from a well and a tank; the well is close to the quarter-guard; the water is of good quality and abundant. The tank is supplied with water, which, having run through the entire cantonments, in uncovered channels, enters a tank at the rear of the lines (this was made pucca during the year), then passes by a drain to a second tank; from this, through rude filters of sand and charcoal, to a large pucca tank. The water of this tank is very impure, and the men are forbidden to use it for drinking purposes, but the temptation to do so is very strong, as it is so much more conveniently situated than the well.

Diet.

IX. Diet.—The diet of the men varies according to their castes. The bazaar supplies are regularly inspected and are the best procurable. There has been no scarcity; indeed, provisions have been cheaper than last year. Under-feeding does not prevail to any great extent among the men.

Clothing.

X. Clothing.—The only alteration in the regimental clothing has been the issue of a good, thick, serviceable overcoat to each man. The men, as a rule, clothe themselves well and comfortably, and all have a good supply of bedding.

Duty and employment.

XI. Duty and employment.—The regimental duties were light; but there are many station guards and night pickets. Since the 10th Bengal Lancers marched from Nowshera in October, the detachments furnished, and other duties performed, by the three cavalry regiments, have fallen upon the two at Peshawar, consequently, their work was much heavier; and the average number of nights in bed, which had been 4 till October, thus fell to 2·19 in November, and 2·87 in December. At head-quarters, the duties of the detachments were light. It is a pity that the men should have had extra duties to perform and a reduction of the number of nights in bed during the most unhealthy months of the year at Peshawar.

Exercise, &c.

XII. Exercise, &c.—The men are not given to the practice of athletic sports when off duty, nor do they appear to seek amusements. A piece of land adjoining the lines was rented for the year with the intention of cultivating it and making gardens by the men, but it did not succeed.

Marches and service.

XIII. Marches and service.—No marches were made by the regiment, except the detachments relieving.

Hospital.

XIV. Hospital.—The hospital consists of two large wards—58×20 and 41×20, guard-room, dispensary, and four small wards,—one used as a godown, one as a bath-room, the others, for ophthalmic and other cases, requiring segregation. The accommodation is ordinarily sufficient; but, during the fever months, tents had to be pitched in the compound. The building is well raised from the ground; there are no windows, consequently the light is very bad; there was no ventilation, but during the year, roof ventilators were put up in the large wards. The present doors are very objectionable; glazed doors should be supplied.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	388·21
Absent	64·46
Total	452·67

Digitized by Google

Station.	Period, From	Period, To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Peshawar.	1st Jan. ...	31st Dec. ...	827·74	546	8	16·35	166·59	·91	4·9
Detachment at Michni ...	Ditto ,,,	31st Jan. ...	48	3	...	·45	73·58	...	0·93
,, at Shabkadar	31st Jan. ,,,	28th Feb. ...	50	1	...	·10	26·07	...	·20
,, at Michni ...	28th Feb. ,,,	31st Mar. ...	48	1	...	·06	24·49	...	·01
,, at Shabkadar	31st Mar. ...	30th Apl. ...	50	1	...	·20	24·88	...	·4
,, at Michni ...	30th Apl. ,,,	31st Aug. ...	48	15	...	·43	93·78	...	·89
,, at Shabkadar	31st Aug. ,,,	31st Oct. ...	50	29	...	2·60	183·11	...	5·2
,, at Michni ...	31st Oct. ...	31st Dec. ...	48·44	21	...	1·51	465·37	...	3·11
,, at Shabkadar	30th Nov. ,,,	Ditto ,,,	50	3	...	·61	70·64	...	1·22
,, at Mackeson	27th Nov. ,,,	30th Dec, ,,,	23	5	...	1	240·34	..	4·34
,, at Abazai ...	Ditto ...	31st Dec. ...	50	9	...	2·20	193·23	...	4·4
Total ,,,	,,,	,,,	888·21	634	8	17·61	166·31	·77	4·53

Number of deaths in hospital 8; out of hospital 1; total 4; per cent. of total strength ... ·88
,, invalided ,,, ,,, ... 16; ,, ,, ,,, ... 3·53
,, sent on sick leave ... ... 20; ,, ,, ,,, ... 4·41
,, of days spent in hospital 6,424; per admission 10·13; per man of total strength ... ... 14·19
,, ,, on sick leave 1,127; per man 56·35; ,, ,, ,,, ... 2·49

Total temporary loss of service per man of total strength ... 16·68

XVI. Principal causes of sickness.—There were 634 admissions into hospital against 527 in 1874, being an increase of 107; of these, 474 were cases of fever, 184 more than in 1874. The months of January, February, September, November and December were the most unhealthy, and were much more so than the corresponding months last year, whereas the remaining months were more healthy than in 1874. There were only 5 admissions into hospital in May. Though there were so many cases of fever, they were of a particularly mild type, except during January and February, when many cases assumed a most dangerous form, being accompanied by bronchitis and pneumonic complications. With the exception of fever cases, the regiment has been very healthy during the year. Principal causes of sickness.

XVII. Principal causes of mortality.—There were only 3 deaths in hospital,—2 from fever, 1 from diarrhœa, and 1 out of hospital. Mortality.

This regiment was passing its second year of residence in Peshawar, and enjoying fair average health. Deputy Surgeon-General Banister reports that, on the date of his inspection, the 27th March, he found the lines had been greatly improved in drainage, order, and cleanliness, but their position was a confined one, and they were completely shut in by the Sudder Bazaar and other buildings to the east and west. The hospital building was in good repair, and the defects in its ventilation had been rectified. The equipment was complete with the exception of the medicines which were running short. There were but 10 patients in hospital, and they were mostly suffering from mild attacks of ague. Of 30 recruits, one was at least 30 years of age, and there were several above 25; the rest were apparently eligible. Inspection.

12th Bengal Cavalry—Peshawar.

Year.	Station.	Per cent. of Strength. Admissions.	Deaths.	Daily sick.
1870 ...	Umballa, December 1868, from Malliganm ...	103·3	1·	3·7
1871 ...	Ditto ditto ...	82·6	·8	2·5
1872 ...	Peshawar, Nov. 1872 ...	109·1	·8	2·8
1873 ...	Ditto ditto ...	220·	1·5	4·6
1874 ...	Ditto ditto ...	156·	1·09	4·1
	Average ...	134·20	1·04	3·54
1875 ...	Peshawar ...	177·35	2·40	3·69

I. Medical Officers.—The regiment was in medical charge of Surgeon-Major H. M. Greenhow from the 1st January to the 2nd August, and of Surgeon J. McConaghey during the rest of the year. The detachments at the Doaba outposts were under the medical charge of Surgeon Daphtary. Medical Officers.

Surgeon J. McConaghey submits the annual sanitary report.

II. Location and movements.—The head-quarters were at Peshawar throughout the year, andfurnished the following detachments:— Location and movements.

Station.	From.	To.	Strength.
Shabkadar ...	1st January ...	31st January ...	50 men.
Michni ...	1st January ...	28th February ...	48 ,,
Shabkadar ...	28th February ...	31st March ...	50 ,,

Digitized by Google

Station.	From.	To.	Strength.
Michni	31st March	30th April	48 men.
Shabkadar	30th April	31st August	50 „
Michni	31st August	30th October	48 „
Abazai	29th September	28th November	52 „
Mackeson	29th September	26th November	23 „
Shabkadar	30th October	30th November	52 „
Jhelum	2nd October	31st December	51 „
Abazai	30th December	31st December	50 „
Mackeson	30th December	31st December	23 „
Michni	31st December	31st December	48 „
Shabkadar	31st December	31st December	50 „

Lines and drainage.

V & VI. Lines and drainage.—The lines are the same as occupied in the previous year. The huts are badly constructed as noticed in former reports, but they have been kept in tolerable repair, and the drainage and cleanliness of the lines are satisfactory.

Conservancy and latrines.

VII. Conservancy and latrines.—The remarks made in the report of 1873 are again applicable; the system works very well.

Water-supply.

VIII. Water-supply.—All the water used for drinking and cooking purposes is obtained from a large pucka well. I am not aware that it has been analysed, but it is said to be very good. No clothes are washed near the well.

Diet.

IX. Diet.—The bazaar supplies have been good and abundant, and periodical inspections have been made. The men are subjected to no restraint as to the amount of food consumed; but, as a rule, they feed themselves properly. Rum is supplied in moderate quantities to those who wish to take it.

Clothing.

X. Clothing.—The clothing is suitable and well adapted to seasons and climate, and to the duties performed by the men.

Duty.

XI. Duty.—The duty is heavy, and consists, besides the usual regimental duties, of pickets and mounted patrols every night round the cantonments. The number of nights in bed is 4·19

Amusements.

XII. Amusements.—The usual exercises of cavalry corps are regularly practised, and prizes are given to the men most skilful in tent-pegging, lime-cutting, &c.

Marches.

XIII. Marches.—The regiment has been stationary during the year, the only movements being the march of detachments to and from the various outposts detailed in paragraph II.

Hospital.

XIV. Hospital.—The hospital is small and badly suited to its purpose as has been previously pointed out. During the autumn months it is necessary to pitch tents for the extra number of sick. The quarters of the hospital establishment are very defective, and no improvements have been made since last report. During the cold season the wards are kept comfortable by means of fires and purdahs; six suits of bedding and clothing have been provided under regimental arrangements, and are used in cases of emergency. Chicks were also supplied for the outside doors at the beginning of last hot season, and were a great source of comfort to the patients; still, as there are no verandahs to the hospital, the wards are intensely warm during the hot months. I believe a temporary verandah will be erected before next hot season, which will doubtless reduce the temperature immensely.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	392·47
Absent	64·20
Total	456·67

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Peshawar	1st Jany.	31st Dec.	320·93	520	5	9·46	162·02	1·55	2·94
Detachment at Shabkadar	Ditto	31st Jany.	50	2	...	0·25	47·09	...	·5
„ at Michni	31st Jany.	28th Feby.	48	3	...	0·60	78·66	...	1·25
„ at Shabkadar	28th Feby.	31st March	50	2	...	0·06	45·62	...	·12
„ at Michni	31st March	30th April	48	4	...	0·90	98·07	...	1·87
„ at Shabkadar	30th April	31st Augt.	50·37	12	...	·47	70·11	...	·93
„ at Michni	31st Augt.	30th Oct.	48	40	...	2·30	498·61	...	4·79
„ at Abazai	29th Sept.	28th Nov.	52	42	...	4·66	483·23	...	8·96
„ at Fort Mackeson.	Ditto	26th „	23·50	23	...	2·70	605·46	...	11·48
„ at Shabkadar	30th Oct.	30th „	52·96	12	...	1·46	258·35	...	2·75
„ at Jhelum	2nd „	31st Dec.	51·29	36	...	3·87	281·49	...	7·54
Total	...	...	392·47	696	5	14·51	177·35	1·27	3·69

Number of deaths in hospital 5; out of hospital 6; total 11;		per cent. of total strength...	2·40
„ invalided	14;	„ „ ...	3·06
„ sent on sick leave	24;	„ „ ...	5·25
„ of days spent in hospital 5,296;	per admission 7·60;	per man of total strength ...	11·59
„ „ on sick leave 3,972;	per man ... 165·5;	„ „ ...	8·69
		Total temporary loss of service per man of total strength ...	20·28

Digitized by Google

XVI. Principal causes of sickness.—The principal admissions have been from fever, 494, or a little more than 70 per cent. of the whole, showing an increase of 80 on the previous year, and a decrease of 99 on 1873. The cases, as a rule, were mild and very amenable to treatment, but several were complicated with pneumonia. From dysentery and diarrhœa there were 27 admissions, from rheumatism 13, from bronchitis and pneumonia 8, from boils and ulcers 25, and from fractures and contusions 41. Principal causes of sickness.

XVII. Principal causes of mortality.—There were 5 deaths in hospital during the year: 1 from enteric fever, 1 from 15 (*a*) pneumonia, 1 from remittent fever, 1 from pneumonia, and 1 from pleurisy. Principal causes of mortality.

Mr. Banister reports that this regiment arrived in Peshawar in 1872; and had not suffered to any great degree from the climate. He made his inspection on the 3rd April, and found the lines particularly clean and orderly, but the huts required additional space and ventilation. A fine well had been recently completed, and from it there was an abundant supply of excellent water. The hospital arrangements were satisfactory, and the most had been done to render the building as comfortable as its great defects and unsuitability permitted. The hospital equipment would have been thoroughly complete on the receipt of the annual supply of medicines which were then due. Inspection.

Mr. Banister states that several among the 69 recruits were overaged, and one was very inferiorly developed.

12th (The Kelat-i-Ghilzie) Regiment Native Infantry—Peshawar.

I. Medical Officers.—Surgeon F. J. Tuohy, M. D., held medical charge of the regiment during the year. The detachments at the Doaba outposts were under the charge of Surgeon G. R. Daphtary, M.D., and at Cherat of a hospital assistant attached to the regiment. The former officer supplies the report of the regiment for the year 1875. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Sialkot, February 1869, from Jubbulpore ...	68·8	1·1	2·1
1871 ...	Ditto ditto ...	51·6	·7	1·7
1872 ...	Ditto ditto ...	64·4	·7	2·2
1873 ...	Peshawar, February 1873	265·3	1·8	10·8
1874 ...	Ditto ditto ...	189·9	2·2	5·5
	Average	128·	1·30	4·86
1875 ...	Peshawar	248·12	5·14	6·78

II. Location and movements.—The head-quarters of the regiment was stationed at Peshawar during the year until the 20th December, on which date it marched in course of the annual relief to Jullundur. The regiment supplied detachments to Fort Shubkudder during whole of months of February, May and June; Fort Michni, March, September and October; Cherat, during the whole of May, and from 3rd October to 1st November. Location and movements.

V. Lines, barracks and huts.—No special remarks regarding the lines or huts are called for; a number of young trees have been planted in the lines, which will in a few years tend to keep the huts cooler and afford a grateful shade during the heat of the day. The drainage of the lines is described as being good, while that of the station generally is "very unsatisfactory." Latrines on the "trench system" worked satisfactorily during the year. Lines, barracks and huts. Drainage. Latrines.

The water-supply has been described in previous reports. The medical officer states that about 10 per cent. of the admissions into hospital during the year were from bowel complaints, and he considers the impurity of the water-supply to have been the cause of these complaints, although every precaution was taken in the lines to protect it from contamination. Water-supply.

The supplies of food in the bazaar are stated to have been plentiful and of good quality. The clothing is described as being suited to the climate and seasons of the year; every precaution has been taken to have the men warmly clothed. Dr. Tuohy considers "the ammunition boot" to be the best suited for the men on service. The duty at Peshawar is said to have been heavy, and was particularly so from May to October; at this time the medical officer states that the men had only 1 night in 7 in bed; and had on the average throughout the year but 3·25 nights in bed. Food. Clothing. Duty.

Digitized by Google

Marches and service.

XIII. Marches and service.—The regiment marched in course of the annual relief to Jullunder on 20th December, when it left Peshawar. The effect of its residence of nearly three years in the most unhealthy lines in that station was noticeable in nearly every face. The men were pallid and worn from repeated attacks of intermittent fever and malarious cachexia; but they rapidly improved on the march; the admissions into hospital from fever becoming less every day, and the number under treatment in camp was much less than it ever had been during the corresponding period of the year in Peshawar. For the first few marches the men suffered from blisters of the feet, but they rapidly disappeared. All the camping grounds were clean and the sanitary arrangements good; and, judging from its effect on the health of the men, the drinking water in all of them was pure. The duty in camp was not severe; nights in bed 4 in 7.

Hospital.

XIV. Hospital.—Has been fully described in previous reports. The ventilation of the centre ward was deficient; but I believe it has since been remedied. The accommodation is sufficient: when the number treated exceeded 60, the convalescents and lighter cases were treated in a spare barrack in the lines. The out-houses for the accommodation of the medical subordinates are very bad; they are constructed on the same principle as the huts in the lines, being dark and low, and only ventilated by the door-way. In February, the hospital latrine, which had been condemned some months previously as detrimental to the health of the men in hospital and the officers in the neighbouring bungalows, was removed, and, up to the time the regiment marched from Peshawar, no move had been made to replace it. The flooring of the hospital is constructed of a pavement of pucka bricks of a very friable and porous description, and always needing repairs; any fluid matter falling on it was rapidly absorbed and decomposed, and the effluvia arising from it was very offensive and must have been prejudicial to the health of the men. A liberal supply of firewood was issued during the severe cold months of January, February, November and December for the use of the hospital. The bedding of the men was always sufficient.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	...	598·5
Absent	...	...	...	...	101·3
			Total	...	699·8

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per Annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Peshawar, and on the march in relief to Jullundur.	1st Jan. ...	20th Dec. ...	35·8	1,350	30	39·3	251·9	5·6	7·3
	20th Dec. ...	21st Dec. ...							
Detachment at Fort Shabkadar.	1st Feb. ...	1st Mar. ...	89	8	...	1·25	117·2	...	1·40
Ditto ditto	1st May	1st July ...	89	3	...	·23	20·1	...	·26
Detachment at Fort Michni	1st Mar. ...	1st Apl. ...	89	5	...	·42	66·4	...	·47
Ditto ditto ...	1st Sept. ...	1st Nov. ...	89	77	...	5·04	513·3	...	5·66
Cherat hills	1st May ...	1st June ...	116	13	...	·88	9·85	...	·28
Ditto	3rd Oct. ...	1st Nov. ...	116	29	...	5·16	324·7	...	4·44
Total ...	...	...	598·5	1,485	30	40·6	248·12	5·01	6·78

Number of deaths in hospital 30; out of hospital 6; total 36;	per cent. of total strength	...	5·14
„ invalided 24;	„ „	...	3·42
„ sent on sick leave 76;	„ „	...	10·85
„ of days spent in hospital 14,820; per admission 9·98;	per man of total strength	...	21·17
„ „ on sick leave 11,704; per man 154;	„ „	...	16·72
Total temporary loss of service per man of total strength		...	37·89

Principal causes of sickness.

XVI. Principal causes of sickness.—Intermittent fever, admissions 1,016; bowel complaints 115; chest complaints 52, of which 31 were pneumonia and 15 bronchitis. Intermittent fever supplied 67·5 per cent. of total admissions. The close of 1875 contrasts favorably with that of 1873-74; the number of cases of fever having been less, and very few followed by chest complications, two of which were fatal. I think the diminution in fever and mortality during that time is attributable in a great measure to the fact that, during the most febrile months in Peshawar, *viz.*, September and October, nearly half the regiment was away either on detachment or leave, and not, as in previous years, living in the most unhealthy and febrile lines in the station, suffering from repeated attacks of fever, which results in a cachectic condition, in which state the cold of the

Digitized by Google

succeeding months is quite sufficient to produce fatal lung sequences. Most of the bowel complaints are attributable in a great measure to the impurity of the drinking water. The pneumonia and bronchitis cases were principally caused by the severe cold and generally occurred amongst the weakly men, low-caste Hindoos, whose constitution had been previously undermined by malarious poison. Bowel complaints.

XVII.—Principal causes of mortality—Contrast very unfavorably with two previous years: 30 deaths in and 6 out of hospital. The greatest number of fatal cases occurred from Peshawar fever; most of them were admitted suffering from ordinary intermittent fever, and after a lapse of 24 or 48 hours lung symptoms became evident; 15 of these cases proved fatal: 13 of pneumonia, 1 acute mania, 1 dysenteric diarrhœa; of the 6 out of hospital, 3 were on sick leave: 1 for splenitis, 1 dysentery, 1 fever. The remaining 3 are returned as fever. Principal causes of mortality.

Mortality amongst different castes—

Hindoos	26
H. Mussulmans	6
Pathans	4
TOTAL ...	36

Mr. Banister reports that this regiment had been very sickly since its arrival at Peshawar in February 1873, and suffered more from the endemic fever than did any other regiment in the station; this was partly owing to the unfavorable position of the lines, but more particularly, in Mr. Banister's opinion, to a too sparing dietary and an insufficiency of the extra clothing, which experience has shown to be indispensably necessary, especially for night duties. The hospital was dirty and in bad repair; there had been an unparalleled continuance of sickness throughout the preceding autumn and winter, followed by a large mortality from pneumonia, and an inordinate amount of temporary invaliding. Mr. Banister states that of the 92 recruits, none were ineligible from over age, but with few exceptions their physical development was below the proper standard. Inspection. Hospital.

20th (Punjab) Regiment Native Infantry.

Surgeon-Major E. O. Tandy, of the 8th Regiment Bengal Cavalry, has submitted the Annual Sanitary Report.

YEAR.	STATION.	PER CENT. OF STRENGTH.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Talagang, March 1869...	136·7	·1	3·5
1871 ...	Ditto ditto ...	99·8	1·1	2·8
1872 ...	Delhi, December 1871...	135·8	1·7	2·7
1873 ...	Ditto ditto ...	112·2	·8	2·7
1874 ...	Ditto ditto ...	140·7	1·4	3·6
	Average ...	125·1	1·02	3·06
1875 ...	Peshawar, March 1875...	118·99	1·73	2·58

I. Medical Officers.—The following officers were in medical charge of the regiment from and to the dates specified:— Medical Officers.

Surgeon S. Brereton, from 1st January to 24th March; Surgeon Keefer, from 24th March to 19th July; Surgeon McConaghey, from 19th July to 11th August; Surgeon T. Robinson, from 11th August to 12th October; Surgeon-Major Tandy, from 12th October to 19th November; and Surgeon B. Gupta, from 19th November to 31st December.

II. Location and movements.—The regiment marched from Delhi on the 4th January 1875, arrived at Peshawar on the 6th March, where the head-quarters of the regiment have been located ever since. The following detachments were furnished to the Doaba outposts during the year under review:— Location and movements.

Station.	From.	To.	Strength.
Shabkadar ...	1st April ...	2nd May ...	90 men.
Michni ...	30th June ...	1st September ...	89 „
Cherat ...	28th August ...	7th October ...	116 „
Shabkadar ...	1st November ...	2nd December ...	90 „
Ditto ...	30th November ...	31st December ...	89 „

Digitized by Google

Topography and physical geography.

III. Topography and physical geography.—The topography and physical geography of the station and surrounding country have been so frequently described by medical officers in previous reports, *vide* those for 1871, 1872, 1873, that no further description of different points under these heads is needed. The features are unvaried, and nothing fresh has since occurred worth recording.

Lines, barracks.

V. Lines, Barracks.—The lines occupied by the regiment are the same which were occupied by the 26th Punjab Native Infantry in the previous three years; these are old lines, built nearly thirty years ago. Hardly any alteration has taken place. The state of repair was pretty fair during the year. The huts are built in blocks; each block consists of two parallel lines of huts arranged back to back, with one common wall between the two series and one common wall to every two contiguous huts of the same series. The roof slopes down a little from the common middle wall. The floor is sunk a few inches below the ground level. There is no communication between any two contiguous huts. There is only one doorway to each hut, *viz.*, that of entrance in front; each hut contains on an average 683 cubic feet; and accommodates two men. Therefore every man has a superficial area of 37 square feet and a space of 341½ cubic feet allowed to him. From the above description it will appear that the disposition and construction of the huts are both faulty; the ventilation is very defective, in fact there is hardly any means for ventilation; while the small allowance of cubic feet allowed to each man makes the matter still worse. Nothing short of a change in the construction and disposition of the huts will make them abodes for men. The lines are built on a slope, with north and north-west sides perfectly open up to the base of the hills.

Drainage.

VI. Drainage.—The cantonments stand on a natural slope, the directions of the slope being from south-east to north-west. The natural drainage is therefore fair, but the soil is very retentive of moisture, and there are a number of hollows in different parts of the cantonment. These two facts serve to keep the ground of the cantonment moist after rain, and render the drainage of sub-soil water by artificial means a matter of great sanitary importance; and it is to be regretted that nothing has been done to improve the soil of so notoriously unhealthy a military station as Peshawar.

Conservancy.

VII. Conservancy.—Conservancy is generally fair: men resort to the fields (at a distance) during the day and to the latrines at night; there are two pucka latrines, one for each wing; one of these has been built during the past year. Dry-earth system is worked successfully; night urinals of the lines require a radical change in construction. The present method is as follows: There are eight urinals, one for each company; each consists of two large ghurras surrounded by tatties; they are placed at some distance from the back of each company. These are night and day urinals. Men void urine in a standing posture, and the ground is invariably tainted, and a disagreeable stench is always perceptible on approaching them, besides, it is distasteful to the Hindoo portion of the regiment to void urine in standing postures. So long as this state of thing continues, perfect cleanliness of the lines cannot be secured.

Water-supply.

VIII. Water-supply.—The water-supply of the cantonment and the water has been frequently described, and continues unchanged. It is a fruitful cause of disease, as all sorts of pollution—animal and vegetable—find easy access to the water used for cooking purposes. The water obtained from the Bara by open water-courses is made to pass through four settling tanks containing pebbles, and ultimately into a large tank, which is covered. There are two such tanks; water is still muddy. There is a large tank for bathing purposes.

Diet.

IX. Diet.—The dieting of the regiment is carried on through the regimental bazaar, which is pretty frequently inspected by the regimental surgeon. Different articles of food are of good quality and of sufficient quantity. Vegetables, milk, atta and ghee are kept in proper condition, and moderate in price. The Pathans and the Punjabi Mussulmans use meat pretty regularly, but the Sikhs and Doogras now and then. Altogether the diet is adapted to the climate of Peshawar; under-feeding or improper feeding is rare, and promptly checked if brought to notice.

Clothing.

X. Clothing.—Clothing of the men (uniform) is adapted to the climate of Peshawar and the duty they perform, but their undress is hardly enough for the winter at this station. The subject has been fully described in previous reports. Posteen or sheep skin coats worn in winter protect the body from cold, but there is some room for improvement in the form of these coats. They don't fully cover the upper parts of the chest in front; if the breast-pieces of these coats were made to overlap each other from the neck in front downwards, they would serve the purpose efficiently.

Duty and employment.

XI. Duty and employment.—The ordinary duty performed in the station is generally heavy, particularly more so in some months than in others.

Exercises.

XII. Exercises.—The Hindoo portion of the regiment use the clubs whenever they have time to do so, but the Pathans are not given to any kind of physical exercise. As a matter of amusement, some pay attention to gardening and rear vegetables for their use.

Marches and services.

XIII. Marches and services.—No service was performed by the regiment during the past year, except the march from Delhi to Peshawar. No other marches were performed by the regiment in 1875.

Hospital.

XIV. Hospital.—The hospital has been described in previous reports. It is well located, but the roof of the hospital requires repair.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	...	...	603·37
Absent	...	...	...	...	...	91·25
		Total	...	...	...	694·62

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per Annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Delhi and Peshawar	1st Jan. ...	31st Dec. ...	562·24	681	11	15·35	121·12	1·95	2·73
Detachment at Shabkadar ...	1st April ...	2nd May ...	90·	4	...	·77	50·64	...	·85
Ditto at Michni ...	30th June ...	3rd Sep. ...	89·	7	...	·67	44·13	...	·75
Ditto at Cherat ...	20th Aug. ...	7th Oct. ...	116·	6	...	1·44	46·02	...	1·24
Ditto at Shabkadar...	1st Nov. ...	31st Dec. ...	90·	20	...	1·43	132·83	...	1·59
Total ...	...	...	603·37	718	11	15·5	118·99	1·82	2·58

Number of deaths in hospital 11; out of hospital 1; total 12; per cent. of total strength	...	1·73
„ invalided ... ... 17; „ „	...	2·45
„ sent on sick leave ... ... 13; „ „	...	1·87
„ of days spent in hospital 5,371; per admission 7·48; per man of total strength	...	7·73
„ „ on sick leave 1,550; per man ... 119·23; „ „	...	2·23
Total temporary loss of service per man of total strength	...	9·96

XVI. Principal causes of sickness.—There were 718 admissions into hospitals against 819, last year being a decrease of 105; of these, 400 were admitted for fever, 120 other diseases, 42 dysentery, 14 diarrhœa, 15 ulcer, 18 general debility, 15 contusion, 20 blistered feet, 179 general diseases. Principal causes of sickness.

XVII. Principal causes of mortality.—There were 11 deaths in hospital; 1 ague, 1 ague complicated with pneumonia, 1 dysentery, 1 diarrhœa, 1 hepatitis, 2 general debility, 1 remittent fever, 1 bronchial catarrh, 2 pneumonia; 1 man committed suicide and died in the lines. Principal causes of mortality.

This regiment, after a three years' tour of duty at Delhi, where the men enjoyed fair average health, arrived in Peshawar early in March. Inspection.

Mr. Banister reports that he made his inspection of the regiment on the 27th of March. Sufficient time had not elapsed for the lines, &c., to be put into proper order, but much had been done, and the arrangements appeared suitable and satisfactory. The hospital was in need of many repairs, and its equipment had to be completed. On the day of inspection there were 16 patients under treatment, and of them, there were but 3 men laid up with sore feet, the result of the march. There were 74 recruits, all of whom were considered more or less eligible.

Remarks by Lieutenant-Colonel R. G. Rogers, *Commanding the Regiment.*

For some months after the regiment reached Peshawar the men resorted for purposes of nature to fields beyond the parade ground, and at a distance from the lines, as then permitted; latterly, movable latrines on the trench system have been resorted to. These are situated beyond the parade ground, on sites specially fixed, and are regularly moved. The night latrines are of unburnt brick, with mud roofs and are well ventilated. The flooring is of mud, and outside each are masonry reservoirs to catch urine, which are regularly emptied. Each company has a movable screen containing two large glazed urinal pans, which are emptied twice daily, or oftener if necessary. The screens are movable and are constantly moved; any smell therefrom is exceptional, not the rule. Conservancy. Night latrines.

The "posteens" complained of come from Cabul, and are of the national pattern. The sepoy cannot save on his pay as it is, and cannot afford fancy articles at fancy prices. "Posteens."

Pathans do not, as a rule, go in for club exercise. In walking, &c., and in "shikar" (when procurable), they take a very great amount of physical exercise. Exercise.

The hospital is dark, gloomy, draughty, and wretchedly uncomfortable, affording but little chance of recovery to men seriously affected with lung or throat diseases. Its roof is mud, and, like all of its kind in Peshawar, leaks almost invariably during rain, but is constantly repaired. Hospital.

Digitized by Google

29th (Punjab) Regiment Native Infantry—Peshawar.

Medical Officers.

I. Medical Officers.—Surgeon J. Young held medical charge of the regiment from the 1st to the 22nd of January, and Surgeon J. McConaghey for the remainder of the year. The Doaba outposts were under the charge of Surgeon Daphtary, and the detachment at Cherat was under Surgeon-Major Meane, 72nd Highlanders.

Surgeon J. McConaghey has written the Annual Sanitary Report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Jhelum, Nov. 1869, from Moradabad to Shahjahanpur.	116·6	3·7	8·
1871 ...	Ditto, ditto ...	92·8	·4	2·3
1872 ...	Ditto, ditto ...	145·9	1·2	4·7
1873 ...	Peshawar, Feb. 1873 ...	277·2	1·8	5·5
1874 ...	Ditto, ditto ...	237·1	1·	5·4
	Average	173·92	1·62	4·18
1875 ...	Peshawar	286·33	1·42	4·97

Location and movements.

II. Location and movements.—The head-quarters of the regiment remained at Peshawar throughout the year, furnishing the following detachments:—

Station.	From.	To.	Strength.
Michni ...	1st January ...	3rd February ...	89 men.
Shabkadar ...	1st March ...	1st April ...	90 „
Michni ...	1st May ...	30th June ...	89 „
Cherat ...	1st July ...	2nd August ...	116 „
Shabkadar ...	1st September ...	2nd November ...	90 „
Michni ...	1st December ...	31st December ...	89 „

These detachments were relieved monthly in the cold, and bi-monthly in the hot, season.

Topography. The topography and physical geography of Peshawar and surrounding districts have been often fully described in former reports.

Lines, &c. *V. Lines, &c.*—The regiment occupied the same lines as in 1873 and 1874, and were fully described in the former year by Dr. Gardner. They have been kept very neat and in good order, and the barracks and huts in good repair and thoroughly clean. The ventilation is not what it might be, but in no case could disease be traced directly to this source. There was little or no overcrowding owing to the number of men almost constantly away on detachment duty.

Drainage. *VI. Drainage.*—The lines are well drained by narrow saucer drains, and a number of sepoys are deputed weekly to keep them clean, and see that no stagnant water remains in or about the lines.

Conservancy. *VII. Conservancy.*—The same system of conservancy existed as in 1873 and 1874, and worked admirably during the past year.

Water-supply. *VIII. Water-supply.*—The water-supply is the same as described in the report of 1873. All the tanks, both those for bathing and drinking purposes, were thoroughly cleaned out in the beginning of last hot weather. No clothes are washed in the immediate vicinity of the tanks used for drinking or cooking purposes.

Diet. *IX. Diet.*—The diet arrangements are the same as in former years. The standard articles of food, such as grain, ghee, milk and vegetables, have been very plentiful, and sold at moderate rates in the regimental bazaar. Very few cases of under-feeding came under observation. A ration of rum is supplied to the Sikhs of the regiment on payment.

Clothing. *X. Clothing.*—Besides the usual regulation dress, posteens are worn by the men on all night and morning duties, and also constantly when in undress during the cold season. This article of dress adds no doubt very much to the comfort of the men as noticed in former reports, and many chest affections and bowel complaints are warded off by its use. Ammunition boots are worn on duty; native shoes generally in undress.

Duty. *XI. Duty.*—The duties, as is ordinarily the case with the native troops in the Peshawar garrisons, were very heavy, but it could not be shewn in any instance that they exercised a prejudicial effect on the health of the men. The average number of nights in bed has been 2·72.

Amusements, &c. *XII. Amusements, &c.*—The men are so much occupied by their duties, that little time is left them for amusement; however, many of them find it a great source of pleasure as well as profit cultivating the regimental gardens, which are kept in very good order. The recruits are exercised at the gymnasium morning and evening, and many of the sepoys join them in the hot season, when wrestling matches and other feats of strength often take place, and are encouraged by the officers.

Marches. *XIII. Marches.*—The head-quarters of the regiment remained at Peshawar throughout the year, furnishing the detachments detailed in para. *II.*

Hospital. *XIV. Hospital.*—The hospital buildings and out-houses were kept in moderate repair during the year, and afforded sufficient accommodation for the sick of the regiment, the average being considerably less during the autumn months than in the two previous years, when it was found necessary to pitch tents for the excess. The brick floor so strongly condemned in former reports has been slightly improved. The hospital is kept fairly warm by means of good fires and purdahs to each door. Chicks were supplied for the outside doors in the beginning of last hot weather by the commanding officer, which added very much to the comfort of the patients.

Digitized by Google

The wards are lighted by means of common *cherags*, one to each ward. There is no hospital bedding, but the men, with exceptions, bring an ample supply with them. In these cases the matter is reported to the Quartermaster, and steps are immediately taken to remedy the deficiency. Numdahs were supplied in the cold season of 1874 by the commanding officer, and are still in use. Lighting.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	626·22
Absent	75·58
Total	701·80

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per Annum. Admissions.	Deaths	Daily average sick.
Head-quarters at Peshawar	1st Jan. ...	31st Dec. ...	536·22	1,388	8	29·87	258·84	1·49	5·57
Detachment at Michni ...	Ditto	3rd Feby....	89	10	...	2·38	120·55	...	2·67
„ at Shabkadar...	„ March...	1st April ...	90	6	...	·61	75·90	...	·67
„ at Michni ...	„ May ...	30th June...	89	15	...	2·33	100·82	...	2·61
„ at Cherat ...	„ July ...	2nd Augt....	116	2	...	·48	19·	...	·41
„ at Shabkadar...	„ Sept. ...	„ Nov. ...	90	40	...	5·12	257·46	...	5·68
„ at Michni ...	„ Dec. ...	31st Dec. ...	89	19	...	2·70	251·26	...	3·03
Total ...	...	...	626·22	1,480	8	31·14	236·33	1·27	4·97

Number of deaths in hospital 8;	out of hospital 2;	total 10;	per cent. of total strength	...	1·42
„ invalided		46;	„ „	...	6·26
„ sent on sick leave		40;	„ „	...	5·69
„ of days spent in hospital	11,021;	per admission 7·44;	per man of total strength	...	15·70
„ „ on sick leave	5,159;	per man 128·97;	„ „	...	7·35
		Total temporary loss of service per man of total strength		...	23·05

XVI. Principal causes of sickness.—Ague, as usual, has caused by far the greatest number of admissions, causing 1,122 out of a total of 1,480, or a little more than 75 per cent. of the whole; it was, however, slightly less prevalent during the autumn months than in the previous year. The disease was not of a bad type, but recurrences were very frequent during the months of October, November, and beginning of December, especially among the recruits who joined last summer. In January and February many of the cases were complicated with pneumonia and bronchitis, and three cases proved fatal from the former complication. Sickness from other causes was comparatively small. Next in order of frequency were bowel complaints, of which 102 occurred, *viz.*, of dysentery 88 and diarrhœa 14. These cases were generally mild, and yielded easily to treatment. Chest affections were the next most prevalent, giving 44 admissions, of which 19 were for bronchitis and bronchial catarrh, 13 for pneumonia, 7 pleurisy, and 5 for phthisis pulmonalis; 1 of the 13 cases of pneumonia proved fatal, and 3 of the 5 cases of phthisis pulmonalis terminated in a like manner, the 2 remaining having gone on sick leave. Blisters and abrasions of the feet caused 38 admissions. The remaining cases do not call for any special remarks. Principal causes of sickness.

XVII. Principal causes of mortality.—Eight deaths occurred in hospital during the year; of these, 3 were from 15 (*a*) pneumonia, 3 from phthisis pulmonalis, 1 from remittent fever, and 1 from pneumonia. Principal causes of mortality.

XVIII. Epidemics.—There was no epidemic disease during the year; all the unprotected recruits and children were vaccinated in the early part of the year. A few recommendations were made on matters of minor importance, which at once received the immediate co-operation of the commanding officer. Epidemics.

Mr. Banister, Deputy Surgeon-General of the Rawal Pindi Circle, made his inspection of this regiment on the 3rd April. Although there had been a great number of admissions into hospital, yet the mortality was inconsiderable. A comparatively small number of men were absent on medical certificate, so that the effective strength of the regiment was equal to, or perhaps greater than, that of any other in the garrison. Mr. Banister reports that "the lines were in admirable order, and the hospital arrangements as good as possible; the equipment also was fairly complete." All the 95 recruits were fairly developed, but 6 of them appeared overaged. Inspection.

Digitized by Google

30th (Panjab) Regiment Native Infantry—Peshawar.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily Sick.
1870 ...	Jhelum, December 1868, from Cawnpore ...	89·6	1·4	2·1
1871 ...	Ditto, ditto ...	74·5	·9	2·9
1872 ...	Nowshera, Nov. 1871 ...	138·8	·7	4·6
1873 ...	Ditto, ditto ...	116·7	1·	2·9
1874 ...	Peshawar, March 1874	249·8	1·	3·8
	Average ...	133·88	1·	3·66
1875 ...	Peshawar	225·35	2·44	6·29

Medical Officers.

I. Medical Officers.—The regiment has been in medical charge of Surgeon D. N. Martin uninterruptedly during the year, with the exception of ten days in April and ten days in October, when the duties were performed by Surgeon Tuohy of the 12th N. I. The detachments quartered from time to time at the Doaba outposts were in charge of Surgeon Daphtary.

Surgeon D. N. Martin has submitted the Annual Sanitary Report.

Location and movements.

II. Location and movements.—The head-quarters of the regiment remained in Peshawar throughout the year. The regiment furnished detachments for the periods shewn in paragraph *XV* to the Doaba outposts. During the cold season, each detachment remained out one month; and during the hot season the detachments remained out for two months at a time.

Topography.

III. Topography.—The position of Peshawar as regards latitude, longitude, altitude, &c., is so well known as to need no description in this report. The large swamp on the right front of the station, called the artillery jheel, has been drained to some extent; but from a personal inspection it does not seem to me that it can ever be thoroughly drained with the amount of fall obtainable by the present plan and direction of the system of drains. I have not heard any engineer speak on the subject, and know nothing about these matters beyond what we might know from mere casual observation of such work; but I should think that the only complete way of draining the jheel would be to run drains from it into the "Boodnia" river, which runs between it and the rising ground of the station, and at a considerable lower level than it (the jheel). The drains would have to be very deep, as the ground rises a little between the jheel and the river. I believe some people expected that the autumnal malarious fever of Peshawar would have been very much less prevalent amongst the troops this year in consequence of this drainage, but the fever has been just about as prevalent as usual. In fact, the drainage as yet has made so little difference in the amount of water in the jheel that no sensible differences in the amount of fever could have been expected.

Meteorology and climate.

IV. Meteorology and climate.—The highest temperature during the year was registered in July, 103°. The lowest registered in January was 52°. The mean of all highest temperatures was 83·41°; the mean of all lowest was 71·91°. The greatest range during any month was in March, *viz.* 20°. The least range in any month or months was registered in May and June, *viz.* 5°. The figure 103° does not represent the degree of discomfort felt in July, as at that time the air was full of vapour. The quantity of rain which fell during the middle and latter end of the year was considerably greater than during the year 1874. During the beginning of the year the amount of rain-fall appeared to be much less than in the previous year.

Lines, barracks, &c.

V. Lines, barracks, &c.—The lines have been already so fully and frequently reported on, that any further description is unnecessary. As stated in last year's report, verandahs have been built to the huts, and are of the greatest benefit and comfort to the men as a lounge during the heat of the day and during the wet weather, and also as an awning under which to sleep in the fever season, when it is too close to sleep in the huts.

Drainage.

VI. Drainage.—The drainage is efficient, the station drainage remaining as previously described. The main portion of the drainage from the European lines runs down into the broken ground in front of these lines. The drainage from the centre and south side of the station runs off towards the ground skirting the south side of it. The station generally has been greatly improved in its drainage and cleanliness during the last five or six years. Except after heavy falls of rain, no stagnant pools of water are now seen about, and those which remain after rain only remain in large drains, the slope of which is not sufficient to take off a large quantity of water quickly. These drains are not many. Peshawar is a station always easily drained, as it is on a rising ground, with ground on a lower level on three sides of it. The only cause of anxiety would be lest the ground surrounding it should ever become so saturated with drainage as to be unhealthy. However, as a great part of this ground is under cultivation, it is not likely to become unhealthy under ordinary circumstances.

Conservancy and latrines.

VII. Conservancy and latrines.—The conservancy system has been the same as that carried out during the previous year. It seems to work well under the strict supervision of the cantonment magistrate, who pays great attention to this particular.

Water-supply.

VIII. Water-supply.—The source for the supply of water to the sepoys for all purposes is still the stream from the Bara river, uncovered throughout its entire course and carrying the usual amount of mud and other impurities. The European lines have got wells in them for drinking water, and European residents can always get water from the various wells in the station; but with the exception of the 12th Bengal Cavalry, which regiment has built a good well for itself in the lines, all the native troops have to drink the water of the Bara.

Digitized by Google

IX. Diet.—This subject has been treated of in the reports of former years, and does not appear to need further remark here, beyond saying that the digestions of the men have now become so impaired after their fifth sickly season in the Peshawar valley, that they are unable to eat even as much as the most penurious of them would feel inclined to. They complain that after eating they constantly feel nauseated and vomit. This is the case with regard to nearly every native in the regiment, native commissioned officers and all. Diet.

X. Clothing.—The clothing of native soldiers as regards uniform is fairly sufficient for the climate experienced in Peshawar; but their Hindoostani clothing is altogether unfit and insufficient. This remark has so often been written by the many medical men who have been in charge of native troops in Peshawar, that it seems useless now to reiterate it here. However it is to be hoped that the Government will eventually do something towards providing the native infantry soldier with some protection for his body against the intense cold of the winter nights in Peshawar. It is well known among the officers of native infantry that the men cannot afford to provide themselves with suitable clothing out of their own pay. Clothing.

XI. Duty.—Duties and employments as reported. The duties are very heavy, particularly the night duties, both regimental and station. There are invariably on regimental duty alone every night from 45 to 50 men. These night duties are the principal cause of the severe forms of illness amongst the men. Duty.

XII. Exercise and amusements.—The men are not at present in a fit state to partake of athletic amusements to any extent. Indeed, I do not think it would be advisable to encourage them to do so. There is no shikar worth speaking of near the station, so that they never think of going out to look for it. Exercise and amusements.

XIV. The hospital and all concerning it has so often been described that it must be well known. It is a suitable building enough for about 9 months of the year, but during December, January and February, it is anything but a suitable place for the treatment of men suffering from the diseases which are then prevalent amongst the native infantry. The doors are a great deal too numerous, and they are wretchedly fitted. The consequence is that the draughts of air are innumerable and constant, and the cold in the early mornings much too great for men ill with acute bronchitis and pneumonia. This cold appears to have a most deleterious effect on the pyrexia of pneumonia and pleurisy. A new latrine is being built for the hospital. It is made of "pucka" bricks outside, and the inner walls forming the compartments are made of kutcha bricks. Hospital. Latrine.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness mortality and invaliding.

Present	628·34
Absent	66·80
Total	695·15

Station	Period		Strength.	Total number of		Daily average number of sick.	Per cent of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Peshawar.	1st Jan. ...	31st Dec. ...	569·34	1,364	13	38·84	239·57	2·28	6·82
Detachment at Shabkadar.	Ditto.	31st Jan. ...	90·00	3	...	00·45	40·00	...	6·00
„ at Michni ...	1st Feb. ...	28th July ...	89·00	6	...	00·67	80·89	...	9·03
„ „ ...	1st April ...	30th April ...	89·00	7	...	00·76	94·38	...	10·25
„ at Shabkadar	1st July ...	31st Augt. ...	89·95	13	...	1·61	86·71	...	10·73
„ at Cherat ...	1st Augt. ...	Ditto.	116·00	5	...	1·05	51·72	...	10·94
„ at Michni ...	1st Nov. ...	30th Nov. ...	89·00	18	...	2·53	242·69	...	34·11
Total ...	...	...	628·34	1,416	13	39·57	225·35	2·06	6·29

Number of deaths in hospital 13; out of hospital 4; total 17;			per cent. of total strength ...	2·44
„ invalided	24;	„	„ ...	3·45
„ sent on sick leave	50;	„	„ ...	7·19
„ of days spent in hospital 14,268;	per admission 10·07;	per man of total strength ...		20·52
„ „ on sick leave 6,045;	per man 120·9;	„	„ ...	8·69
Total temporary loss of service per man of total strength ...				29·21

There were 202 fewer admissions in 1875 than in 1874. But the number of days spent in hospital in 1874 was only 13,665, which shows the greater severity of the sickness during this last year. There were only 10 men sent on sick leave in 1874, whilst 50 went on sick leave in 1875. The number of days spent on sick leave per man of total strength was 1·583 in 1874, as against 8·69 in 1875. The total temporary loss per man of total strength was, in 1874, 21·1 days, as against 29·21 days in 1875.

XVI. Principal causes of sickness.—The principal cause of sickness was intermittent fever, which gave 953 admissions. Next in order of frequency came dysentery, giving 83 cases; diarrhœa give 49; dyspepsia gave 32 admissions; boils gave 28 admissions; conjunctivitis 15; and pneumonia and pleurisy 13 and 11 admissions, respectively. The fever cases of the last year were 305 less than those of the year 1874; but the cases were more severe, requiring more treatment and entailing a longer stay in hospital. The men of the regiment, being so much reduced in strength from the frequent attacks of fever to which they have been Principal causes of sickness.

Digitized by Google

subject since 1871 in this valley, were peculiarly liable to the severer forms of malarious intermittent fever.

Principal causes of mortality.

XVII. Principal causes of mortality.—Pneumonia caused the greatest number of deaths, giving 6 deaths out of the 13 fatal cases which occurred in hospital; remittent fever came next, giving 3 deaths; bronchitis, pleurisy, inflammation of the brain, and debility gave one each; from which it will be seen that chest diseases caused 8 deaths out of 13; a significant proportion—showing the severity of this climate on the native constitution. Between the 2nd January and the 14th February, inclusive, 7 deaths occurred, 5 of which were due to pneumonia and the other 2 to bronchitis and pleurisy. The case of bronchitis was in the person of a man who had been subject for several years previously to a severe attack of acute bronchitis during each cold season.

Epidemics.

XVIII. Epidemics.—There was no epidemic during the year.

Vaccination.

XIX. Vaccination.—The children of the regiment were successfully vaccinated during the early part of the year. The recruits entertained have all been previously inoculated.

Special observations and remarks.

XXI.—In addition, I have only a few remarks to add with respect to the causation and character of pneumonia as met with in the native infantry regiments stationed in the Peshawar valley. I believe it to be no epidemic, but merely inflammation of the lungs, brought on by exposure and discomfort during extremely cold weather, as I have known it to come on after a heavy fall of rain, when men might have been wet and uncomfortable during the whole day or night, and on returning to their quarters have had comforts, such as warm food with a good fire, plenty of bedding, &c. It has also come on during hard, dry, harsh weather, with very cold nights. The month of January is that in which nearly all the cases of pneumonia occur, or rather from about the 25th December to the 20th January. Of course, cases occur both before and after these dates, but the number of cases which occur during the period included between these two dates would warrant one in describing it as the 'pneumonia time'. As a rule, the men affected are men who have suffered considerably from fever, *i. e.*, who have had constant light attacks, or who have had a few severe attacks.

When the thermometer is down to 52° or 51° during a great part of the day, with a cold cutting wind and rain hanging about, then is the time to expect cases of pneumonia. And cases which come into hospital during this weather are not nearly so likely to recover as cases which come in during milder weather; and for a severe case of pneumonia in hospital, I believe the best remedy is the sudden change from severe to mild weather. This may be imitated artificially by getting ready warm rooms with a steamy atmosphere for the patients suffering from pneumonia.

Inspection.

This regiment was inspected by the Deputy Surgeon-General of the Rawal Pindi Circle on the 28th March. Mr. Banister reports that "the lines were in very good order, and the huts had been greatly improved by the addition of verandahs. The hospital was much in need of the usual annual repairs; the management was, however, satisfactory and the equipment tolerably complete." "There had been an overwhelming amount of sickness during the preceding autumn and winter, chiefly owing to malarial fevers of a graver than the ordinary type, complicated in many instances with pneumonia."

The Deputy Surgeon-General did not think much of the recruits, 80 in number.

Brigade Staff Hospital, Peshawar.

Brigade Staff Hospital, Peshawar.—Mr. Banister inspected this institution on the 5th April, and on that date he found a large attendance of out-door patients who were Government servants, and 45 in-patients. The building and premises were in very fair order, and the arrangements satisfactory. Surgeon-Major Ferguson of Her Majesty's British Medical Service was then in medical charge.

Lock hospital.

Lock Hospital, Peshawar.—At Mr. Banister's inspection, on the 5th April, there were 9 women under treatment in hospital; nothing had been done to improve the accommodation or add to the conveniences, and all the arrangements, entered into two years previously for the purchase of a more suitable building, had completely broken through. The equipment was in serviceable order.

Statistics.

The average number of registered prostitutes for the whole year had been 48·32, and must have represented but a small proportion of the actual number engaged in prostitution. There were 204 admissions from this strength during the year, and the average number of daily sick was 7·04.

Out of an average strength of 1,494·31 European soldiers, 186 became infected, or at the rate of 124·4 per mille; but in this number were included a few cases of secondary affections, and several of primary disease contracted at Murree, Cherat, and on the march. Mr. Banister also states that "the cantonment committee having expressed their satisfaction at these results, I offer no remarks, except that I cannot agree with them."

Doaba out-posts.

Doaba out-posts.—Mr. Banister made his inspection on the 29th and 30th March; he reports that the garrison at each of the Forts of Michni,

Digitized by Google

Shabkadar and Abazai consisted of 50 cavalry and 90 infantry soldiers, and was furnished by the regiments in Peshawar and Nowshera. The garrison was relieved every two months, from May to October, and once a month in the cold weather. All the out-posts were furnished with very fair accommodation for 12 sick, and a proportionate hospital establishment.

Fort Michni.—The latrine was again in the same unsatisfactory condition, and so great a source of offence, that Mr. Banister recommended its removal from the basement to the top of one of the bastions—an arrangement which, he says, answers remarkably well at the other forts. The hospital was fairly appointed and occupied by one patient. Fort Michni.

Fort Abazai.—The enclosure was in excellent order throughout, and the conservancy arrangements perfectly satisfactory. The hospital was clean and serviceably equipped. Fort Abazai.

Fort Shabkadar.—This fort, the head-quarters of the command, covers a larger area than either Abazai or Michni, and is hemmed in on the south by the dirty and ill-drained village of Shunkunghur, which, in the event of an epidemic, would compromise the safety of the garrison. Surgeon G. N. Daphtary, M. D., had been in medical charge of the outpost for two years, and resided at Shabkadar, paying weekly visits to Abazai and Michni, each between 7 and 8 miles distant. Fort Shabkadar.

10th Bengal Cavalry (Lancers)—Nowshera.

Surgeon-Major G. V. Currie was in medical charge during the entire year, and reports as follows:— Charge.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Sialkot from Malligaum	100·	1·3	3·2
1871 ...	Ditto ditto.	103·5	·2	2·8
1872 ...	Nowshera, November 1871	163·8	·4	4·8
1873 ...	Ditto ditto.	127·	·6	4·1
1874 ...	Ditto ditto.	180·	1·5	5·3
...	Average	134·86	·80	4·04
1875 ...	Nowshera	108·31	1·06	5·60

II. Location and movements.—The regiment was quartered at Nowshera up to the 14th of October, when it marched for the camp of exercise at Delhi, which it reached on the 11th of December, and remained there until the breaking up of the camp. Location and movements.

III. Topography.—The topography of Nowshera and its vicinity has been fully described in my previous reports of the station, and no alteration has since taken place calling for any remarks. Topography.

IV. Meteorology and climate.—This has also been fully described in former reports. Suffice it to say, that it is very agreeable and healthy, having a long cold, and very short hot, season. The cold weather sets in about the beginning of October and lasts till May, punkahs and tatties not being required till about the middle of that month. June is the hottest month in the year, and then the heat is intense, having been for several days as high as 100° in some houses. Meteorology and climate.

In July rain fell and the temperature was immediately much reduced. In August, after very heavy and continuous rain, the Cabul river overflowed its banks, and the whole of the station and adjacent country was one sheet of water, which, on subsiding, left in many places large swamps; but, strange to say, no increase of sickness followed as might have been expected.

It is in my opinion a very salubrious climate and station for both Europeans and natives, and it appears to agree well with European children, all having a fresh and healthy appearance. On this account I consider it one of the most desirable stations in the Punjab. The prevailing wind was westerly; dust-storms occasionally occurred during the very hot months, but were rare compared with what takes place at stations lower down and in the North-West Provinces.

V. Lines and huts.—A description of these was given in former reports, and they have undergone no change since, with the exception that all holes and excavations were filled up; many of the huts were thoroughly repaired and not a few rebuilt; a very great improvement was also effected by levelling the spaces between them. The horses are picketed in regular rows, and there is a good street through the centre of each troop. The lines were neat and clean, and were improved since their occupation by the regiment. Lines and huts.

VI. Drainage.—Consists entirely of small surface drains intersecting the lines and communicating with two large ones on each side of the lines, at such an angle or slope that even after heavy rain it is carried off very rapidly. Drainage.

Digitized by Google

Conservancy. *VII. Conservancy.*—The same as described in former reports. The dry-earth system was rigidly enforced and worked satisfactorily.

Water-supply. *VIII. Water-supply.*—From three masonry wells, ample for all requirements, and without exception the purest water I have ever tasted in India.

Diet. *IX. Diet.*—Food of all kinds used by native soldiers has been procurable in sufficient quantity and at reasonable prices. The bunniahs are kept under the strictest surveillance as to the food they supply, both to the men and horses, and when in fault, are very severely punished.

Duty. *X. Duty.*—The duties are those ordinarily performed by cavalry and are not heavy. None of them are likely to prove injurious to the health of the men.

Clothing. *XI. Clothing.*—Very close supervision is exercised over the men in this respect, both as regards their military and ordinary undress clothing.

Exercise and amusements. *XII. Exercise and amusements.*—Tent-pegging, lime-cutting, single stick, lancemen's sword, polo, shooting, fishing, &c.

Marches and services. *XIII. Marches and services.*—The regiment was remarkably healthy on the line of march and in camp, more so than I have ever known it in cantonments. The site told off for the regiment at the camp of exercise was very well chosen—on an elevated piece of ground in the neighbourhood of the flag-staff tower and close to the ridge leading to Hindoo Rao's house—a situation in every respect suitable for a camp, owing to the elevation, favorable nature of the soil, absence of vegetation, good slope on every side, and no swampy ground in the immediate vicinity.

Hospital. *XIV. Hospital.*—This was fully described in last year's report.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	...	...	...	...	376·71
Absent	...	...	...	...	76·99
			Total	...	453·70

Stations.	Period. From	Period. To	Strength.	Total Numbers of Admissions.	Total Numbers of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Nowshera and Camp of Exercise at Delhi	1st Jan. 1875	31st Dec. 1875	310	365	...	11·97	117·74	...	3·86
Detachment at Abazai ...	Ditto	28th Sept. 1875	50	17	...	·37	45·79	...	·74
„ at Mackeson ...	Ditto	30th Sept. 1875	25	20	...	·46	116·32	...	2·00
Depôt at Nowshera ...	Ditto	18th Feby. 1875	40	4	1	4·60	7·49	18·62	11·50
„ Umballa ...	1st Dec. 1875	31st Dec. 1875	29	2	1	4·51	25·55	12·77	4·90
Total ...	...	...	376·71	408	2	21·11	108·31	·53	5·60

Number of deaths in hospital 2; out of hospital 2; total 4; per cent of total strength ... 1·06
„ invalided ... ... 12; „ „ ... 3·16
„ sent on sick leave ... ... 15; „ „ ... 3·98
„ of days spent in hospital 4,922; per admission 12·06; per man of total strength ... 10·85
„ „ on sick leave 2,363; per man ... 177; „ „ ... 5·37
Total temporary loss of service per man of total strength ... 16·72

Principal causes of sickness. *XVI. Principal causes of sickness.*—By far the largest proportion of cases treated have been for intermittent fever of the quotidian type. They were all nearly free from complication with organic disease, and there was generally nothing required for their cure but emetics and purgatives to clear the liver and alimentary canal, followed by quinine and sometimes *liquor arsenicalis*, and the recoveries were less protracted than last year.

Principal causes of mortality. *XVIII. Principal causes of mortality.*—There were no deaths at the head-quarters of the regiment, but 2 occurred at the depôt hospitals, both from intermittent fever. One man died at his home while on furlough, and 1 was killed instantaneously by a large mass of rock falling on his head and fracturing his skull while he was employed excavating earth and sand in one of the hills close to the lines to plaster or leep the huts of the regiment.

Epidemics. *XVIII. Epidemics.*—No epidemics occurred during the year.

Vaccination. *XIX. Vaccination.*—This was performed eighteen times, and all proved successful. Very few of the men had their families with them, and owing to this the return of cases operated on is small. There were no cases of small-pox.

Inspection. Deputy Surgeon-General Banister made his inspection of this regiment on the 22nd March 1875. He reports that on this occasion he found the lines in good order and free from overcrowding. The new hospital had been occupied since June 1874, and was complete and suitable in every respect, with the exception of the warming arrangements, which it was thought might

Digitized by Google

be improved by the substitution of open fire-places for the faultily constructed stoves then in use. Mr. Banister states that everything was in perfect order. There were no deficiencies among the supplies, and the patients, 12 in number, were receiving every possible attention. The out-offices afforded very good accommodation for the whole of the establishment. The recruits, 22 in number, were all considered to be more or less eligible.

This regiment left for Umballa in October, in course of relief, after a residence of four years at Nowshera. The men were not, perhaps, so strong and vigorous as they were on their first arrival, but they were certainly in average health.

27th (Punjab) Regiment, Native Infantry—Nowshera.

I. *Medical Officers.*—The following medical officers have been employed with the regiment during the year 1875. At head-quarters (1) Surgeon T. Robinson, M.B., from 1st January to 9th August; (2) Surgeon-Major G. O. Currie, 10th Bengal Lancers, from 10th August to 13th October; (3) Surgeon T. Robinson, M.B., from 14th October to 31st December. At the depôt, Nowshera, Surgeon T. Moleny, M.D., from 1st January to 16th February. Detachment at Fort Abazai was under the care of Surgeon G. R. Daphtary, M.D., in medical charge, Doaba outposts. The other detachments, detailed in the succeeding paragraph, were under the care of hospital assistants. Medical Officer

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Bareilly, March 1868, from Peshawar.	56	·8	2·5
1871 ...	Ditto ditto ...	98·3	·4	2·3
1872 ...	Barrackpore, April 1872	246·9	1·7	3·3
1873 ...	Ditto ditto ...	81·3	2·8	2·9
1874 ...	Nowshera, Feby. 1874...	144·2	2·9	5·03
	Average	134·24	1·72	4·22
1875 ...	Nowshera	127·97	1·35	3·54

Surgeon Robinson furnished the annual sanitary report.

II. Location and movements.—The head-quarters were at Peshawar for field exercises, in combination with the other troops in garrison at that station, from 1st January to 16th February. On 17th February, the regiment marched to Nowshera, a distance of 27 miles, where it continued until the end of the year. Detachments were sent out as follows:— Location and movements.

(1.) Fort Mackeson for the whole year.
(2.) Fort Abazai for the whole year.
(3.) Cherat for June, and from 1st November to 16th December.

The detachments at Forts Mackeson and Abazai were relieved at intervals of one month in the cold, and two months in the hot weather.

III. Topography and physical geography.—Full information on this head is given in the following books: (*a*) the Medical and Sanitary Report of the Native Army in Bengal for 1869, pages 156 to 159; (*b*) the same report for the year 1870, pages 223 to 228; (*c*) the same report for the year 1872, pages 185 to 188. Topography and physical geography.

IV. Meteorology and climate.—The only instrument available for observations is a common thermometer, by which three observations were taken daily throughout the year, in the morning, at noon, and in the evening. The highest recorded temperature was on 5th of July, 103F.°; the highest mean temperature was in the month of June. The record of temperature is incomplete as regards this station, for the regiment was stationed in Peshawar until 17th February. There was a violent shock of earthquake on 12th December, by which every building in Nowshera was more or less injured. The regimental hospital escaped pretty well, two transverse arches of the eastern verandah only having been injured. There were two or three minor shocks afterwards, but they did not add to the injury already done. No accident to human life was reported in the station, but there were accounts of fatal events from some of the neighbouring villages. Another shock was experienced on 24th December, but no damage was done. I consider the clime of Nowshera to be very good and healthy. During a short period of the past hot weather (about 15 days) the temperature was rather high, but we suffered no ill effects from it. Meteorology and climate.

V. Lines, barracks, or huts.—The position of the huts in which the men live is to the south of the station generally, which itself is on the south side of the Grand Trunk Road. There are 16 huts, each of which holds half a company. The ventilation is good, being effected by 6 doors in each hut. The site is nearly quite level, and the soil is sandy or gravelly. On the north, west and east sides the plain is quite open and level; on the south side, about 800 yards distant, are sand hills. The exposure to the sun would be complete were it not that certain fast-growing trees have been planted, whereof the effect is pleasing to the eye and gratifying to the feelings of the men. The long axis of each of the huts is from north to Lines, barracks or huts.

Digitized by Google

south. The drainage is entirely surface, and there being a gentle slope towards the north and west, there is no lodging of water after rain. The huts are built of mud, well "leeped;" they have flat roofs; their capacity is 11,799 cubic feet, and they are kept in excellent repair. On account of so many men being constantly absent, and a considerable number more being occasionally absent, there is no possibility of overcrowding.

Drainage.

VI. Drainage.—There are no pucka drains in the station, but alongside of each road there are two ditches, from which a portion of the materials for the roads was taken. These are kept fairly clear, and serve as drains for carrying off the rain-water. No filth of any kind is allowed to be deposited in them on any account. They appear to be quite sufficient for their purpose.

Conservancy and latrines.

VII. Conservancy and latrines.—The conservancy of the station is carefully carried out, and, as it would appear, successfully. The excreta are carried away in carts and buried at a considerable distance from cantonments. There are latrines (dry-earth system) near the regimental lines, to the south of them, which are used by the women of the regiment only, the men having recourse, for the purposes of nature, to the adjacent sand-hills, where there are certain places marked out for them by stakes, within which they must go.

Water-supply.

VIII. Water-supply.—There are five pucka wells in and near the lines, from which water of an excellent quality is drawn, and the supply is abundant. I am not aware of any recent analysis of the water. The wells in use are all covered with wooden covers, and much care is taken that no impurities get into the water. When bathing themselves, the men draw water from the wells and then retire to a short distance to perform their ablutions. The washing of clothes takes place on the bank of the River Loondee, which is to the north of the Grand Trunk Road, and consequently, nearly a mile from the lines occupied by the regiment.

Diet.

IX. Diet.—The men diet themselves and do so sufficiently. The regimental bazaar is kept very clean and in excellent order. Attah, dhall, rice, spices, ghee, potatoes and several other kinds of vegetables are in abundance; the quality good, and the prices moderate. The bazaar supplies are examined daily by the quartermaster and the native officer of the day. I have several times visited all the shops in the bazaar, and invariably found the supplies of good quality. Meat can be had by those who desire it. The food is suitable for the men for the climate they live in, the work they have to do, and the means they have of living. No instance of improper or under-feeding has come to my notice, but should any be detected, the man would be promptly punished. Rum for the Sikhs and other spirit-drinking Hindoos is procured from the Commissariat Department on payment, on the recommendation of the medical officer.

Clothing.

X. Clothing.—The men have each two suits of uniform, one for the hot weather and one for the cold. The former is made of stout drill, khakee colored, and the knicker-bocker trousers are made large enough for the men to put on any native articles of dress they please beneath them. The winter dress is of good strong cloth; the fashion is the same as that of the summer clothing. At all seasons they wear gaiters, which button closely round the ankle and calf. When on duty in the station, as parades, guards, orderly duties, &c., they always wear ammunition boots, which suit them very well; there were but few cases of sore feet from wearing boots during the year. On the march they wear native shoes and *puttees* (bandages wound round the leg from below upwards) instead of ammunition boots and gaiters. At the commencement of the present cold weather, posteens were procured for all the recruits, and there are besides sufficient in the quartermaster's store to issue one of them to each man mounting guard at night, which is returned into store next morning. This is a very good plan. The undress clothing is sufficient, at least in the case of those men who have been in the regiment for a couple of years. The recruits, as a rule, have not enough of clothes.

Duty and employment.

XI. Duty and employment.—These are such as are incidental to the profession of a soldier—parades, guards, musketry, escorts for commissariat and ordnance stores, treasure and prisoners, besides detachments at Forts Abazai and Mackeson for the whole year and at Cherat for about two and a half months. For the last two and a half months of 1875, the regiment was the only one at Nowshera available for all guards and escorts, the 10th Bengal Lancers having marched about the middle of October. We have had to relieve all guards proceeding either up or down the Grand Trunk Road, so that duty has been rather heavy; however, the men do not seem to have suffered therefrom. The number of nights in bed has been 4·99.

Exercise, amusements, and occupations.

XII. Exercise, amusements, and occupations.—There are a good many small gardens to the north of the lines in which the men grow sundry vegetables. A gymnasium has been erected through which the recruits have all to pass. They practise the dumb-bells, the parallel and horizontal bars, vaulting, &c. There is very little shikar near Nowshera, and the men do not go out.

Marches and service.

XIII. Marches and service.—The regiment made but one march during the year, *viz.*, that from Peshawar to Nowshera on the 17th February. A detachment has been at Fort Abazai during the whole year; its average strength was 86 men. It was under the care of the medical officer of the Doaba outposts. Another detachment was at Fort Mackeson for the whole year; its average strength was 32 men. It was under the care of a hospital assistant. A third was at Cherat for the month of June, and again from 1st November to 16th December; its average strength was 116 men. It was under the care of a hospital assistant, but he was supervised by a European medical officer, the senior at Cherat, for the time being.

Hospital.

XIV. Hospital.—This is the best native soldiers' hospital I have yet seen. It is light, cheerful, airy, well-built, thoroughly ventilated, and is admirably suited for the treatment of diseases of ordinary occurrence. It is situated nearly due west of the lines, at a distance of

Digitized by Google

about 100 yards; its long axis is from north to south. It, including the out-offices, is open on all sides. The latrine, in which the dry-earth system is enforced, is situated to the south of it, and the excreta are carried away in a conservancy cart twice daily. The hospital is a pucka building, made of stone and brick, and the roof is tiled. Its extreme length outside 175 feet, breadth 43 feet 6 inches; at each corner is a small ward 12 feet × 12 feet, used respectively as (1), an office; (2), the dispensary; (3), the ablution-room; (4), a store-room. There are two verandahs, one on the east side and one on the west, 8 feet wide, which run nearly the whole length of the building, being bounded at either end by the small wards just mentioned. The wards for the reception of the patients are two in number, slightly unequal in size, one being 78 feet × 20 feet, the other 72 feet × 20 feet, the larger being intended to accommodate 26 patients, the smaller 24 patients (total 50 patients). They communicate by an arched doorway about 10 feet high. There is a separate building, in which are two distinct wards, also to the south of the hospital (the latrine being between them), which is intended for the reception of such cases as it might be advisable to treat apart from the other patients; and a dead-house is in course of construction. The quarters for the hospital assistants and medical pupils and for the hospital establishment are on the west side of the hospital, about 20 yards distant, and the cook-houses are facing the north end. The capacity of the larger ward is 26,910 cubic feet, and that of the smaller is 24,840 cubic feet, total 51,750 cubic feet, which would give to each man, supposing the entire hospital to be occupied, 924 cubic feet. The ventilation could hardly be improved upon, there being in the length of the two wards 12 doors and 14 windows, besides a door at each end. The 12 doors and 14 windows can be closed or opened at will, and when all are closed there is abundance of light, for all the windows are glazed. The building is in very good repair, but it is not able to keep out heavy and continued rain. It has been a little shaken by the recent earthquakes; but I do not think that it leaks more in consequence. I think the warming arrangements are not good, consisting merely of a small iron stove in each ward, which throws out but little heat and is not of much use; but I believe that fire-places will soon be substituted for the stoves. The sepoys bring their own bedding with them, and are always well supplied; but there is some difficulty about the recruits, for in truth they have very little clothing, as a rule, when they join the regiment. There has been, I am very glad to say, no overcrowding in the hospital during the year. The maximum number of patients who were under treatment on any one day was 36, and no case required to be segregated during the year under consideration.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	593·1
Absent	...	...	...	...	106·8
Total				...	699·93

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Peshawar and Nowshera.	1st Jan. ...	31st Dec. ...	446·92	503	8	15·51	112·54	1·79	3·47
Detachment at Abazai ...	Ditto ...	Ditto ...	86	132	...	1·90	153·48	...	2·20
Ditto at Mackeson ...	Ditto ...	Ditto ...	32	84	...	1·64	262·50	...	5·12
Ditto at Cherat ...	29th May ...	2nd July ...	117	11	...	2·51	98·	...	2·14
Ditto at Cherat ...	29th Oct. ...	17th Dec. ...	116	16	...	2·01	100·70	...	1·73
Depôt at Nowshera ...	1st Jan. ...	17th Feb. ...	100	13	1	12·44	98·8	7·60	12·44
Total ...	...	...	593·1	759	9	20·98	127·97	1·52	3·54

Number of deaths in hospital 9; out of hospital 4; total 13; per cent. of total strength			...	1·85
„ invalided	23;	„ „ ...	...	3·28
„ sent on sick leave	3;	„ „ ...	...	·41
„ of days spent in hospital 7,058; per admission	9·3;	per man of total strength	...	10·08
„ „ on sick leave 480; per man ...	160;	„ „ ...	...	·68
Total temporary loss of service per man of total strength			...	10·76

XVI. Principal causes of sickness.—The principal causes of sickness were, as usual in this country, fever, which accounts for 461 admissions; next in order of frequency came boils 41, dysentery 28, diarrhœa 17, bronchitis 16, colic 16, and contusion 16. There is nothing in the prevalence of these diseases to call for special remark. Principal causes of sickness.

XVII. Principal causes of mortality.—Of the 8 men who died in hospital, 3 died from fever, 1 from syphilis, 1 from bronchitis, 2 from bowel-complaints, and 1 from general debility. Mortality.

XVIII. Epidemics.—There were no epidemics during the year. Epidemics.

XIX. Vaccination.—There was no vaccination in the regiment, but towards the close of the year, I vaccinated a few children in the regimental bazaar with lymph obtained from the Vaccination.

Digitized by Google

Inspector-General of Vaccination, Punjab. The only result I obtained was a pustule in one child, but it had been taken so little care of, that I was unable to procure any lymph from it. Nearly all the sepoys are protected, many of them having had small-pox, and most of the others have been either inoculated or vaccinated.

Recommendations.

X. Recommendations.—The only recommendation I made during the year was that fire-places should be substituted for stoves in the hospital. This was made on the 29th June, and I have reason to believe that in course of time this very desirable change will be made.

Special observations.

XXI. Special observations.—I have no special observations to make on the regiment for the year under consideration.

Inspection.

This regiment was inspected on the 25th March by Mr. Banister. He reports that the lines were in excellent order, and the new hospital and out-offices (exactly similar to those of the 10th Bengal Lancers) had fulfilled every requirement, except that the stove had proved an utter failure. All the arrangements evinced carefulness and judgment, and the patients, 24 in number, were well attended to. The recruits, Mr. Banister states, were unusually good, and one only out of 73 could be objected to.

Lock Hospital, Nowshera.

Lock Hospital, Nowshera.—On the day of Mr. Banister's inspection, the 22nd March, there was but one woman under treatment; the premises were in good order, and the arrangements satisfactory. The number of prostitutes on the register fluctuated between 22 and 43, and there were 88 admissions (gonorrhœa 26, primary syphilis 26, and ulceration of the *cervix uteri* 36) during the year. The average strength of the European garrison was 442·77, and of them 109 contracted disease, which was nearly five times the number of the previous year. The only explanation offered for such a very unfavorable result was that the villages in the vicinity of the musketry camp were not under the Contagious Diseases' Act, and afforded facilities for promiscuous intercourse, which could not be suppressed.

PUNJAB FRONTIER FORCE.

(INCLUDING THE STATIONS OF ABBOTTABAD, MARDAN, KOHAT, EDWARDESABAD, DERA ISMAIL KHAN, DERA GHAZI KHAN, AND RAJANPUR.)

Average strength present during the year ...	Artillery,	493·4	Cavalry,	1894·4	Infantry,	7550·6
„ daily sick per cent. of average strength ...	„	5·59	„	4·94	„	4·49
Ratio of mortality per cent. of average strength...	„	1·48	„	1·55	„	2.39

Peshawar Mountain Battery—Abbottabad.

Medical officers.

I. Medical officers.—Surgeon J. W. Johnston reports as follows:—

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily Sick.
1870 ...	Kohat, March 1869 ...	349·2	1·8	7·3
1871 ...	Abbottabad, April 1871	206·3	·6	4·4
1872 ...	Ditto ditto ...	175·3	3·7	2·9
1873 ...	Kohat, February 1873...	285·7	·6	5·1
1874 ...	Ditto ditto ...	239·3	·6	4·1
	Average	251·16	1·46	4·76
1875 ...	Abbottabad, February 1875	198·27	...	6·

Surgeon-Major J. W. Johnston held charge of the battery at Kohat from the 1st January to the 15th of February; Surgeon-Major S. Mackertich was in charge at Abbottabad from the 27th of February until the 22nd of April; Surgeon Battersby from the 23rd April until the 17th of October; and Surgeon-Major J. R. Johnson from the 18th October to the 31st of December.

Location and movements.

II. Location and movements.—The battery was at Kohat from the 1st of January till the 15th of February. On the 27th of February, it reached Abbottabad, where it was stationary for the rest of the year.

Lines and barracks.

V. Lines and barracks.—The mountain battery barracks at Abbottabad are picturesque buildings and in point of internal economy and arrangements are patterns of cleanliness and neatness. The quality of accommodation they afford is far superior to that ordinarily provided for native troops. The rooms are lofty and well ventilated, but slightly deficient in superficial area, and, when the men are all present, there is barely space enough for their beds.

Drainage, Conservancy, &c.

Drainage: Conservancy: Water-supply: Diet: Clothing.—Full details under all these heads have been given in previous reports. No alterations have been made in respect to any of them during the year.

Digitized by Google

XI. Duty.—Duty was of the ordinary kind, and never arduous in character. Each man had five nights in bed during the week. Duty.

XIII. Marches.—The battery marched from Kohat on the 15th February and arrived at Abbottabad on the 27th idem. Marches

XIV. Hospital.—One ward of the station hospital at Abbottabad is allotted to the battery, and is ample for its requirements. Hospital.

XV. Sickness, mortality, and invaliding.—Strength of the battery:— Sickness, mortality, and invaliding.

Present	139·20
Absent	27·11
Total	166·31

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Kohat and Abbottabad	1st Jan. ...	31st Dec. ...	139·20	276	...	8·36	198·27	...	6·00

Number invalided	4; per cent. of total strength	...	2·40
„ sent on sick leave	1; „ „	...	·60
„ of days spent in hospital	2,954; per admission 10·70; per man of total strength	...	17·76
„ „ on sick leave	122; per man 122; „ „	...	·73
Total temporary loss of service per man of total strength		...	18·49

XVI. Principal causes of sickness.—The following table gives, in order of frequency, the principal causes of admissions— Principal causes of sickness.

Groups of Diseases.	Number of admission.	Per cent. of total admissions.
Accidents	65	23·55
Intermittent fevers	54	19·56
Diseases of digestive system	49	17·39
Diseases of respiratory system	29	10·50
Cutaneous diseases	26	9·42
Rheumatic affections	22	7·97
Feet blisters	18	6 52

Although high, the ratios of admissions and daily average of sick, given in paragraph *XV* contrast favorably with those of the preceding year, and show a marked improvement in the health of the battery at Abbottabad in comparison with what it was at Kohat. An admission rate of 23·55 per cent. of the total admissions from accidents at once indicates the chief cause of temporary inefficiency in mountain batteries. In other words, about 47 per cent. of the men present were treated for this single cause during the past year. Loading and unloading mules, and leading these animals daily over hill sides and difficult mountain paths are occupations involving great risks of sprains, kicks, bruises, and other accidents, which the returns prove to be very frequent, and due allowance should be made for this circumstance when comparing the battery sick rates with those of other corps. Cause of temporary in efficiency in Mountain Batteries.

XX. Vaccination.—The men are protected either by inoculation or previous attacks of small-pox. All the children born in the lines are regularly vaccinated. Vaccination.

Mr. Banister made his inspection of this battery on the 10th May, and reports that "the barracks were in admirable order, but space had been sacrificed for ornamentation; and when the full strength was present, more or less crowding was unavoidable. The ward in the garrison hospital occupied by the sick was cold and dingy, but sufficiently spacious. There were no deficiencies in the hospital equipment. The three recruits were well developed." Inspection.

Mr. Banister found the huts occupied by the men of this detachment to be very indifferently ventilated, and large collections of stable litter were in close proximity to them. The men had been very healthy, and on the day of his inspection no one was on the sick list. Detachment 2nd P. C.

Digitized by Google

5th Goorkha Regiment (Hazara Goorkha Battalion)—Abbottabad.

Medical officers.

I. Medical officers.—Surgeon-Major J. R. Johnson was in medical charge throughout the year, and reports as follows :—

Location and movements.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
Detachments. 1870 ...	Abbottabad ...	266·5	1·5	8·8
1871 ...	Ditto	147·7	1·7	3·7
1872 ...	Ditto	126·9	2·2	5·1
1873 ...	Ditto	110·6	1·8	3·3
1874 ...	Ditto	109	1·3	4·2
	Average	152·15	1·70	5·02
1875 ...	Abbottabad ...	98·30	2·14	4·42

II. Location and movements.—The regiment was stationary during the year, and occupied its permanent quarters, the left infantry barracks at Abbottabad.

Detachments.—Duties of this nature were, up to the 18th of October, similar to those of the preceding year, when, owing to the departure of the 5th Punjab Infantry for the Delhi camp of exercise, station and outpost work previously divided between the two corps devolved upon the 5th Goorkha Regiment. In November and December, duty was consequently above the average, and the number of nights in bed per man was reduced from 5 to 4 in the week. An increase in the rates of sickness for these months might at first sight be attributed to excessive work, but was really due to a different cause. The admissions took place in men recently returned from furlough and not amongst those employed on station and outpost duty.

The detachment at Ughi is relieved monthly; it was absent from head-quarters 266 days, and its average strength for this period was 64·78. In March, a small party returning from Goruckpore with recruits were attacked with cholera in Oudh, and ten of their number perished.

Meteorology and climate.

IV. Meteorology and climate.—In January, February, March, and April the weather was unusually bright, clear, and bracing. Rainfall in these months was either unevenly distributed, or below the average in quantity, and the spring crops in high unirrigated tracts suffered from drought. The failure, however, could not have been extensive, as it exerted no unfavorable influence on the grain rates of the district. The regular or hot-weather rain was excessive, and only ceased in the first week of October, and it is worthy of notice that these prolonged rains, extending almost into the cold weather, were not productive of malarial fevers either in the regiment or district. November and December were marked by severe and trying cold, and snow fell heavily on the 27th of the latter month. Total rain-fall for the whole year was 56 inches and one-tenth.

Lines.

V. Lines.—No changes have been made in the barracks and lines, which are as described in last year's report.

Drainage, Conservancy, &c.

VI. VII. Drainage, Conservancy, &c.—The condition of the regiment and its surroundings, in reference to drainage, conservancy, water-supply, diet, and clothing, are unaltered, and no changes worthy of special mention have been made in any of these respects in the year now under review.

Duty and employment.

XI. Duty and Employment.—This has already been briefly alluded to in a previous paragraph. Work was light, and the number of nights in bed 5 in 7 up to the 18th of October. From that date until the end of the year, duty was heavy, and the number of nights in bed only 4 in 7. The extra work thrown upon the regiment in November and December had no unfavorable influence on the health of the men, and no sickness could be traced to this cause.

Hospital.

XIV. Hospital.—The station hospital at Abbottabad, three wards of which are allotted to the 5th Goorkha Regiment, has often been brought to notice as unsuited in many respects to its purpose. Its most prominent defects are insufficient light and inadequate means for the maintenance of a proper degree of heat in the wards during the cold weather. Large fires, burning at one end only, benefit the patients in their immediate vicinity, and fail to keep up a moderate degree of heat throughout the wards. It has lately been suggested that a more uniform heat can be secured by substituting for the fire-places now in use, either hot-air flues or hot-water pipes. A proposal to this effect has been sanctioned by Government, and the work will soon be put in hand. The want of light is so great that it is often impossible to find out the nature of a patient's disease without moving his bed from the dark main wards into the verandah rooms, which, although cold and comfortless, are well lighted.

Sickness, mortality, and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the regiment—

Present	628·63
Absent	118·52
Total	747·15

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Abbottabad	1st Jan. 1875	31st Dec. 1875	582·61	589	5	27·37	101·09	·85	4·69
Detachment at Ughi ...	266 days.		64·78	29	...	·62	63·04	...	·95
Total	...	...	628·63	618	5	27·82	98·30	·79	4·42

Number of deaths in hospital 5; out of hospital 11; total 16; per cent. of total strength			... 2·14
,, invalided	61;	,, ,,	... 8·16
,, sent on sick leave	1;	,, ,,	... ·13
,, of days spent in hospital 10,157; per admission	16;	per man of total strength	... 13·59
,, ,, on sick leave 24; per man ...	24;	,, ,,	... ·03
Total temporary loss of service per man of total strength			... 13·62

Health.—The health of the regiment was excellent during the year, and if general deductions could be based on a single year's experience, or upon the ratios of admissions, deaths, and daily average of sick shown in the foregoing table, Abbottabad would at once earn a high reputation for salubrity. But, unfortunately, the occurrences of 1869-70 are still too recent to be forgotten, and they remind us that when widespread epidemic influences are in operation, Abbottabad can suffer even more severely than other places less favorably situated. Health.

Nearly 60 old soldiers, who would otherwise have been invalided in April, were, in obedience to recent orders, kept on until October, and the presence of these men in the corps for six months beyond the ordinary time had a perceptible effect in raising both the admissions and daily average of sick rates of the whole regiment.

Goorkha recruits are obtainable only in the cold weather, and so long as old soldiers of this class were invalided in spring, it was impossible to fill up their places until the ensuing winter. The new order directing these men to be invalided only in October will admit of vacancies in the ranks being filled up as soon as they occur, and the regiments will thus be maintained at their full strength.

The following table shows in order of frequency the principal causes of admissions :— Causes of sickness.

Diseases.	Number of admissions.	Ratio per cent. of total.
Intermittent fevers	299	48·22
Feet blisters	55	8·89
Diseases of digestive system	47	7·62
Diseases of respiratory system	47	7·62
Cutaneous diseases	36	5·82
Eye affections	36	5·82
Accidents	35	5·66
Venereal affections	21	3·39
Rheumatic affections	19	3·09

There is little or no difference between the admission rates of 1874 and 1875 from intermittent fevers. Both were healthy years, and in both, this one cause occasioned nearly 50 per cent. of the total sickness.

Feet-blisters, with a percentage of 8·89, are the next in order of frequency. An attempt has been made to lessen inefficiency from this cause by substituting native shoes on marching duty for ammunition boots, which were previously worn at all times. The adoption of this measure has been too recent to admit of its merits being fairly tested, but as well as I can ascertain from the returns, it has not led to the desired effect, for feet-blisters are just as frequent now as they were when boots only were worn. The remaining groups of diseases are nearly identical with those of the preceding year, and present no characteristics needing special comment.

XVII. Principal causes of mortality.—There were in all 16 deaths, 11 of which took place away from head-quarters, and 5 occurred in the regimental hospital at Abbottabad. Of the former, 10 were due either to cholera or to diseases contracted in a cholera camp, and one man was killed by wild beasts while at his home on furlough. Of the 5 deaths in hospital, 3 were due to pneumonia, one to dysentery, and one to phthisis. Principal causes of mortality.

XVIII. Epidemics.—Pneumonia or pleuro-pneumonia is rapidly forcing itself on attention as the *bête noir* of frontier stations. From time to time I have observed various circumstances in connection with this disease which lead me to suspect that it is probably often of a contagious type. Like other epidemics, it appears in sudden and violent outbursts, and when once started or introduced, its spread is just as rapid in mild as in severe climates. In the cold weather of 1874-75 pneumonia was even more prevalent and fatal in the sub-tropical climate of Dera Ghazi Khan than at Abbottabad, where winter cold almost equals that experienced in the south of England. The leading facts of a severe outbreak of this disease in Epidemics.

Digitized by Google

the 5th Punjab Infantry, and of a very mild one in the 5th Goorkha Regiment at Abbottabad during the past winter, are as follows:—

The 5th Punjab Infantry left Dera Ghazi Khan on the 15th October 1874 and reached to Abbottabad on the 23rd of November. They had a few cases of pneumonia on the line of march, and admissions from this cause rapidly increased after their arrival at this station. Seizures and deaths continued frequent until the middle of March, when, having carried off between 20 and 30 victims, the epidemic finally subsided. It is worthy of notice that the 1st Punjab Infantry, which took the place of the 5th Punjab Infantry at Dera Ghazi Khan, also suffered severely from pneumonia at the latter station. From the 24th November 1874 until the middle of March 1875, while the 5th Punjab Infantry was rapidly losing men, there was only one admission in the 5th Goorkha Regiment from any disease even resembling pneumonia. During this period the health of the Goorkhas was excellent, and at his inspection the Brigadier-General Commanding the Punjab Frontier Force remarked on the robust, healthy appearance of the men.

In the middle of March, when winter had given place to a mild and genial spring, a *bania*, or flour merchant, in the Goorkha bazar was attacked with pneumonia, and shortly after his seizure 13 cases and 3 deaths occurred among the men of the regiment; 5 of these cases were admitted between the 21st and 31st of March, 7 between the 1st and 23rd of April, and one on the 10th of May. None of these men dealt with the bania who was first taken ill, and their seizures after this was merely a coincidence,—a *post*, but not a *propter hoc*. The hospital dresser, whose duties kept him in constant attendance on the pleuro-pneumonia cases, had also a sharp attack of the same disease. In most of these cases the disease was mild in type and undistinguishable from ordinary pneumonia. Pleuritic pain was generally present and often severe in character. The portion of lung actually hepatized was limited in extent, and the apices, or middle of the lungs, were affected quite as frequently as their bases. The three men in whom the disease proved fatal were weakly subjects, and would probably have succumbed to any acute disorder. One of them was a dissipated bandsman, another a man who under-fed himself, and the third a youth whose health was completely undermined by constitutional syphilis.

During the epidemic I had only one opportunity of witnessing a *post mortem* examination after death from pleuro-pneumonia. The case was that of a young, well-nourished Sikh, camp follower of the 5th Punjab Infantry. This man died very suddenly. The entire surfaces of pleuræ and pericardium were covered with a dense coating of yellow lymph. Both lungs were intensely congested, but actual hepatization was limited to a third or even less of anterior and middle of left lung; this part was solid, heavy, and in the condition recognized as grey hepatization. The heart chambers on both sides were blocked up with decolorized clots, which extended some distance into the vessels. The spleen was a little enlarged, and other abdominal organs normal.

In another case of sudden death from this cause, which I had an opportunity of investigating some years ago, there were, in addition to the pneumonia above described, pleuritic effusion on one side, and congestive enlargement of the solitary glands in the small intestines. The main facts of the outbreak at Abbottabad are briefly these:—

1*st*.—Pleuro-pneumonia was introduced by the 5th Punjab Infantry, and for upwards of three months was exclusively confined to that corps.

2*nd*.—It then spread in a mild but distinctly epidemic form to the 5th Goorkha Regiment, and the hospital dresser while attending on the sufferers was stricken with it. These seizures took place in spring, when ordinary pneumonia is not prevalent.

If the hypothesis of contagion be accepted in reference to pleuro-pneumonia, it would at once account for all the circumstances attending this outbreak. But very strong arguments can be urged against the theory of contagion which would tend to make the facts observed correspond with admittted principles. Thus it may justly be asserted that the 5th Punjab Infantry was transferred to a cold climate from a sub-tropical and malarious station at an unfavorable season of the year, and that the sudden change naturally provoked pneumonia and other diseases of the respiratory system in men who were weak and anæmic from previous attacks of fever. But this does not explain why the Goorkhas suffered in spring when the men of the 5th Punjab Infantry, who had previously shown their liability to the disease, enjoyed complete exemption from it. The etiology and clinical history of this disease have yet to be studied, and the foregoing facts, although bald and meagre in themselves, may, in conjunction with those furnished by other observers, assist in throwing some light on a very interesting subject.

Vaccination. *XIX. Vaccination.*—The system of carrying on vaccination described in last year's report is unaltered. The efficiency of work done under this head was subjected to a severe test last year, when small-pox was prevalent for several months in the civil station and neighbouring villages. During the progress of the epidemic, only one out of 200 children residing in the Goorkha lines and married quarters suffered from the disease.

Inspection. Mr. Banister inspected this regiment on the 10th May. He reports that the lines were efficiently drained, free from overcrowding, and in admirable order. All the arrangements bore evidence of great judgment and care, and could not have been improved on. The accommodation allotted to the regiment in the garrison hospital barely suffices for a healthy season, and in winter, when the verandah rooms are too cold and draughty for occupation, some amount of

Digitized by Google

overcrowding cannot be avoided. The wards were badly lighted and inadequately warmed. This regiment enjoyed better health during 1875 than in any previous year since 1871. Fewer cases of phthisis fell under observation, malarial fevers and bowel-complaints declined, and although diseases of the respiratory organs were more or less prevalent during the winter and spring, yet pneumonia did not occur until the end of March, when it furnished 13 admissions and 3 deaths.

5th Regiment, Punjab Infantry—Abbottabad.

Surgeon W. E. Battersby, M.B., has submitted the annual sanitary report of this regiment for 1875.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dera Ismail Khan, January 1869... ...	174·4	1·8	3·6
1871 ...	Ditto ditto ...	123·5	...	3·2
1872 ...	Dera Ghazi Khan, March 1872	210·4	...	4·4
1873 ...	Ditto ditto ...	169·9	1·	3·9
1874 ...	Abbottabad, November 1873	222·5	...	4·5
	Average	180·14	·56	3·92
1875 ...	Abbottabad ...	95·79	1·65	3·27

I. Medical officers.—Surgeon-Major S. Mackertich continued in medical charge of the regiment from the commencement of the year until the 10th May, when he proceeded to Europe on furlough, and was then relieved by Surgeon W. E. Battersby, M.B., who has remained in medical charge up to date. On the departure of the regiment on the 18th October *en route* to the Delhi camp of exercise, Surgeon-Major Johnson, 5th Goorkhas, assumed medical charge of the detachment and invalids left behind at Abbottabad. The detachments furnished from time to time (alternately with the 5th Goorkhas) to Fort Ughi and to Haripur were under the medical charge of hospital assistants. Medical officers.

II. Location and movements.—The regiment continued to be stationed at Abbottabad from the 1st January to the 17th October. On the 18th October it marched *en route* to the Delhi camp of exercise, where it arrived on the 9th December and remained till the close of the year, having left behind at Abbottabad a detachment numbering 210 men. Location and movements.

The following detachments were furnished by the regiment during the year :—

(1.) 35 men to Haripur from the 2nd January to 5th February.
(2.) 53 men to Ughi from 2nd February to 9th March.
(3.) 35 men to Haripur from 2nd March to 5th April.
(4.) 53 men to Ughi from 2nd April to 8th May.
(5.) 35 men to Haripur from 1st May to 5th June.
(6.) 53 men to Ughi from 2nd June to 8th July.
(7.) 105 men to Ughi from 25th June to 8th July.
(8.) 35 men to Haripur from 3rd July to 8th August.
(9.) 81 men to Ughi from 3rd August to 7th September.
(10.) 35 men to Haripur from 2nd September to 7th October.
(11.) 61 men on escort duty with the Deputy Commissioner of the district from 22nd April to 6th May.

IV. Meteorology and climate.—No regular meteorological observations were recorded owing to the want of proper instruments. The climate, during the winter months, is described as being cold and windy with occasional falls of rain ; but no snow fell during the year 1875. During the spring and summer months, the climate was equable and very pleasant,—cool in the mornings and at night, and at no time was the heat intense. Meteorology and climate.

The lines of the regiment are reported on as being in a very low position and close to cultivated fields, and during the rainy months are on this account considered to be damp and unwholesome. No description has been given of the huts or barracks as regards their state of repair, the amount of accommodation, or the ventilation in them. Lines.

The drainage of the lines was considered to be fair, and the conservancy arrangements are stated to have been fairly good. No latrines were in use, and consequently the men had to resort to the fields for necessary purposes. Drainage.

The water-supply was ample, of good quality, and taken from wells. All the articles of food on sale in the regimental bazaar were of good quality and abundant. Vegetables were brought into the bazaar in large quantities and were sold at a cheap rate. Mr. Battersby states that the men were on the whole well nourished, and all signs of scurvy, which had to some degree existed in the regiment previously, soon disappeared. Water-supply.

Digitized by Google

Clothing.

The clothing was considered suitable to the climate and to the nature of the duties the men had to perform. During the march to and from Delhi and while at the camp, only a small number of footsores were observed, and this, Mr. Battersby observes, "shows how admirably adapted the native chuplis and shoee are for such work."

Marches and service.

XIII. Marches and service.—The regiment did not proceed on active service during the year. The only lengthened march was made by the head-quarters of the regiment (with a strength of 520 men) to the camp of exercise at Delhi. This march occupied from 18th October to 9th December. The distance travelled was 550 miles (more than 510 miles of this distance along the Grand Trunk Road). The longest march made was 19·4 miles and the shortest 8, the average being a little more than 11 miles. The hour of starting was usually between 4 and 5 A.M. The accommodation in camp was ample, and the arrangements were uniformly good. The camping grounds were good with two or three exceptions,—between Umballa and Delhi, which were dirty from frequent previous occupation; and that at Guzerat, which was wet and swampy. No rains fell during the march, and the weather was pleasant, though somewhat cold at nights towards the latter part of the journey.

Hospital.

XIV. Hospital.—The hospital at Abbottabad—a cut-stone building used by the entire garrison—is very undesirably situated and ill-planned; the wards are cold, and the accommodation quite insufficient. The two wards assigned to this regiment can only accommodate 20 patients, and the consequence is, that cold and draughty verandahs, quite unsuitable for the purpose, have to be utilized for the sick whenever room for a larger number is required. New latrines for the use of the sick have been erected this year and were much wanted.

Sickness, mortality, and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the regiment:—

Present	...	...	...	...	641·97
Absent	...	...	...	...	85·26
Total				...	727·23

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Abbottabad ...	1st January ...	17th October ...	585·26	442	11	28·14	95·08	2·36	4·80
„ *en route* to Delhi	18th October ...	9th December ...	519·12	80	...	10·21	106·12	...	1·96
„ at Delhi ..	10th December	31st December ..	519·09	33	...	18·56	105·35	...	3·57
Detachment at Haripur	2nd January ...	5th February ...	35	...	...	...	...	...	...
„ „ Ughi ...	2nd February ...	9th March ..	53	7	...	1·2	133·83	...	2·26
„ „ Haripur ...	2nd March ...	5th April ...	35	...	...	...	...	...	...
„ „ Ughi ...	2nd April ...	8th May ...	53	9	...	·87	167·7	...	1·64
„ „ Haripur ...	1st May ...	5th June ...	35	...	...	...	...	...	...
„ „ Ughi ...	2nd June ...	8th July ...	53	7	...	·28	119·07	...	·48
„ „ Ughi ...	25th June ...	Ditto ...	105						
„ „ Haripur ...	3rd July ...	8th August ...	35	...	..	...	...	...	...
„ „ Ughi ...	3rd August ...	7th September...	81	4	...	·62	49·48	...	·76
„ „ Abbottabad	18th October ...	31st December...	210·25	33	...	13·60	76·35	...	6·47
„ on escort duty ...	22nd April ..	6th May ...	61	...	...	...	...	...	...
Total ...	.....	.....	641·97	615	11	20·99	95·79	1·71	3·27

Number of deaths in hospital 11; out of hospital 1; total 12; per cent. of total strength		...	1·65
„ invalided	30; „ „	...	4·12
„ sent on sick leave	6; „ „	...	·82
„ of days spent in hospital 8,114; per admission 13·19; per man of total strength		...	11·15
„ „ on sick leave 568; per man ... 94·6; „ „ „		...	0·78
Total temporary loss of service per man of total strength		...	11·93

Out of the 615 admissions during the year, 270 were from fevers, 62 from respiratory diseases (including 33 from pneumonia), 60 from skin diseases, 44 from diarrhœa and dysentery, 26 from mouth and stomach diseases, 17 from venereal affections, and 73 from contusions, injuries, wounds, &c.

Principal causes of sickness.

XVI. Principal causes of sickness.—The health of the regiment during the first three months of the year was very bad, owing to the continued prevalence of pneumonia; but as the weather became warmer, and the men recovered from the effects of the numerous attacks of fever from which they suffered at Dera Ghazi Khan in the previous year, this disease disappeared.

Digitized by Google

XVII. Principal causes of mortality.—The men since have on the whole enjoyed good health. Out of the 11 deaths in hospital, 9 were from pneumonia, one from pleuritis (pneumonia supervening subsequently), and one from dysentery of long standing in an old and enfeebled sepoy. The one death out of hospital was that of a man who had suffered from intermittent fever repeatedly, and latterly from hepatitis as a complication. Mortality.

XVIII. Epidemics.—With regard to the continued appearance of pneumonia, I can add nothing to the remarks of Dr. Mackertich in his last annual report. The causes he assigns appear to me to completely account for this disease and its severity. Intermittent fever, of a generally mild type, has appeared pretty constantly, and a couple of cases of enteric fever. The new regulation forbidding high standing crops within 300 yards of cantonments has evidently produced good results in diminishing the amount of sickness in Abbottabad, and I think the distance might be increased to a quarter of a mile with advantage. Epidemics.

XXI. Special observations.—During the year, 147 men presented themselves as recruits. Of these 24 were rejected by the medical officer after, careful examination, for defective eyesight, inferior pysique, or disease; and 16 recruits were discharged by the commanding officer as unlikely to make efficient soldiers. Special observations.

Mr. Banister inspected the regiment on the 12th of May. He reports as follows:— Inspection.

"The regiment arrived in the winter, and although it had been a great deal exposed to malarial influences during the three preceding years at Dera Ghazi Khan, and suffered severely from pneumonia throughout the whole of the cold weather, I found, at a personal inspection of the men, that two only were anæmic, and 8 slightly tainted by scurvy. The lines were clean and orderly, but deficient both in space and in ventilation. Among the 13 men on the sick list, 3 were convalescent from pneumonia, which, since the commencement of the year, had furnished 27 admissions and 8 deaths. The hospital equipment was complete in all details with but few exceptions. The greater number of the 116 recruits were strong and promising young men."

Corps of Guides—Mardan.

I. Medical officers.—Surgeon A. H. Kelly continued in charge of the corps throughout the year, and reports as follows:— Medical officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Mardan	183·5	1·8	9·8
1871 ...	Ditto	128·3	·9	5·9
1872 ...	Ditto	136·1	·5	4·4
1873 ...	Ditto	169·4	·9	5·9
1874 ...	Ditto	127·6	·81	4·7
	Average ...	148·98	·98	6·14
1875 ..	Mardan	157·78	·63	5·71

II. Location and movements.—The head-quarters were at Mardan the whole year. Small detachments were furnished to Abbottabad, Roorkee, Lahore, Peshawar, and a guard of 10 men remained at Yarkand from the previous year returning to Mardan on the 5th November. The men at Peshawar furnished a guard to the Commissioner of the district. They were relieved monthly. Location and movements.

III. Topography, &c.—This has been fully entered into in former reports, and an excellent description of the Yusufzai valley and its inhabitants given in Surgeon-Major Bellew's book published some years ago. As a short summary, it may here be stated that the cantonments of Mardan are situated 15 miles nearly due north of Nowshera on the bank of the Chalpani. There is a widespread open country on all sides. Less than half a mile north-north-west, there is the small village of Bagdada, and about the same distance due south on the Nowshera Road is the small civil station. The soil is a dry sandy loam free from stagnant water or swamp; there is little or no irrigation with the exception of the water from a few wells about cantonments. The principal crops are barley in the spring, Indian-corn, moong, mote, and mustard in the autumn. The average distance of water from the surface in wells is 29 feet. Topography, &c.

IV. Meteorology and climate.—The highest temperature was in June, when the thermometer frequently stood at 107°, and the lowest in January, when 20° was registered one night. The greatest daily range of temperature was in May and the lowest in September. 42·30 inches of rain fell in 38 days. July was by far the wettest month. Earthquakes have latterly been severer and occur more frequently than in former years; 9 shocks were felt during the twelve months. The greatest of these was on the 12th December at 1-30 A. M. It was preceded by a loud rumbling noise for a second or two, when violent and rapid vibrations occurred in a north-east and south-west direction. Several houses fell, and the remainder have been so much damaged as to be unsafe. The men and most of the officers were obliged to vacate them, and at present are housed in tents and huts. On comparing accounts from surrounding stations, Mardan seems to have been about the centre of the Meteorology and climate. Earthquakes.

Digitized by Google

vibrations, as they were more severely felt and occasioned more damage here than either at Peshawar or Nowshera. Three people were killed by falling houses.

Lines. *V. Lines.*—The lines are the same as occupied in previous years. Those of the infantry are situated within the fort; they are generally overcrowded in the cold weather. The cavalry occupy ground to the south and south-east of the fort. The married men have a serai behind the 4th troop.

Drainage. *VI. Drainage.*—There is good natural and artificial drainage which empties into the adjacent nulla. A new brick sewer was completed from the married quarters. A staff of sweepers is maintained to keep the drains and sewers clean. Those in the fort are flushed twice daily with water from a well furnished with a Persian wheel and worked by bullocks.

Conservancy and latrines. *VII. Conservancy and latrines.*—The conservancy of the station and lines is under the direct supervision of the Quarter Master. There are only two latrines, one for the hospital and another recently erected for the men on guard; this latter is in an open space of ground to the east of the bazaar. In both the dry-earth system is carried out. With the exception of those in hospital and on duty, the men all resort to the cultivated land about cantonments. No inconvenience arises from this arrangement, as the ground is a considerable distance from any habitation.

Water-supply. *VIII. Water-supply.*—An abundant supply of good drinking water is procured from wells. Those used for this purpose are annually cleaned out, but some of them might be better protected from the return of solid matter into them. The mules and some troop horses are watered in the stream of the Chalpani, which lower down is used for washing and bathing purposes.

Diet. *IX. Diet.*—There is a good bazaar, which is well supplied with vegetables and the ordinary produce of the country. Prices are moderate, and the men with few exceptions feed well.

Clothing. *X. Clothing.*—The hot-weather clothing of the cavalry consists of loose drill coats, breeches and long boots. In the cold season they wear serge-coats, posteens and great-coats. The infantry in the warm weather likewise wear drill clothing, and during the winter, cloth tunics, posteens, and great-coats. The latter, both for cavalry and infantry, are made of thick barak, are long, double-breasted, and admirably suited for cold-weather use. Ammunition boots are worn on parades; native shoes or chuplis on other duties. The choice in this respect is left to the men themselves. Great attention is paid to the bedding of the men to see that they are properly provided with a sufficiency of a warm description; to this I attribute in a great measure the almost total absence of pneumonia amongst the men.

Duty and employment. *XI. Duty and employment.*—The duty has been severe, owing to the number of men absent on command. At head-quarters it consisted of the ordinary parades and guards. The number of nights in bed in seven for the year was 4·82. I do not consider that it told injuriously on the health of the regiment, as the nature of the duty was not severe and the men were well protected against cold.

Exercise, amusements, &c. *XII. Exercise, amusements, &c.*—The men engage extensively in athletic sports. Recruits, both of the cavalry and infantry, go through a systematic course of gymnastics, including horizontal and parallel bars, running, jumping, &c. Games are annually held and prizes given to champions. The men were very successful at athletic sports held in Peshawar during the spring and carried off more than half of the prizes from their competitors.

Marches. *XIII. Marches.*—No marches were made except those of the detachments.

Hospital. *XIV. Hospital.*—The hospital has been previously described; it was whitewashed twice during the year. The want of proper accommodation for servants was much felt. There is no contagious ward. Overcrowding, however, did not occur, as numbers of men are always treated as out-patients. The building was warmed by two fires at night during the winter months. The men use their own bedding while in hospital.

Sickness, mortality, and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	...	...	...	...	810·20
Absent	...	...	...	...	292·31
Total	...			...	1102·51

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Mardan	1st January ...	31st December ...	768·11	1,191	5	39·88	155·05	·65	5·19
Detachment at Abbottabad	Ditto	5th March ...	38·85	2	...	·85	29·36	...	2·18
„ Abbottabad	20th August ...	31st December ...	17·32	1	...	·35	14·83	...	2·02
„ Lahore ...	8th January ...	21st May ...	62·04	9	...	·67	39·50	...	1·07
„ Lahore ...	26th November ...	31st December ...	72·38	9	...	2·11	126·02	...	2·91
Total ...	...	...	810·20	1,212	5	43·86	149·71	·61	5·41

Number of deaths in hospital	5; out of hospital	2; total	7; per cent. of total strength	... ·63
„ invalided	... ...	...	48; „ „	... 4·35
„ sent on sick leave	... ...	...	29; „ „	... 2·63
„ of days spent in hospital	14,570; per admission	12·02;	per man of total strength	... 13·21
„ on sick leave	2,271; per man	78·30;	„ „	... 2·05
Total temporary loss of service per man of total strength				... 15·26

Digitized by Google

XVI. Principal causes of sickness.—The following table shows the class of diseases causing admissions and their relative frequency:— Principal causes of sickness.

	Agues and sequences.	Bronchial affections.	Bowel complaints.	Ophthalmia.	Rheumatism.	Injuries.	Syphilitic.	Hepatitis.	Ulcers.	Pneumonia.	Other diseases.	Total.
January	36	13	4	1	6	4	2	...	...	...	45	111
February	60	17	6	...	7	2	4	...	...	2	29	127
March	36	4	6	3	6	...	4	1	..	...	25	85
April	32	6	17	4	3	...	...	1	...	...	34	97
May	33	3	11	5	2	2	2	...	...	...	36	94
June	22	2	6	5	3	6	4	...	...	...	34	82
July	24	2	5	9	2	...	1	...	...	...	49	92
August	40	8	6	4	2	2	...	1	...	...	41	104
September	42	3	5	7	1	1	1	...	...	...	35	95
October	51	2	3	2	2	4	1	1	2	...	33	101
November	43	7	7	2	...	4	2	...	1	...	39	105
December	45	13	2	3	3	6	3	...	1	...	43	119
Total ...	464	80	78	45	37	31	24	4	4	2	443	1,212

XVII. Principal causes of mortality.—Five deaths occurred at head-quarters; they all took place in hospital. Phthisis caused two, old standing heart disease one, pneumonia one, and diarrhœa one. The down-country men, especially Goorkhas, are more liable to consumption than Pathans; but whether this is due to the climate or mode of living of the different races, I am not prepared to say. The Sikhs and Goorkhas generally suffer much from ague and its sequences, during the first two years of their residence in Yousufzai, before they become acclimatized. Principal causes of mortality.

XVIII. Epidemics.—There were no epidemics during the year.

XIX. Vaccination.—One Goorkha recruit, who joined at the commencement of the hot weather, and was unprotected, was vaccinated. The men are, I believe, without exception, protected from small-pox, either by previous attacks or inoculation. Epidemics. Vaccination.

XX. Recommendations.—The state of the drainage in the fort was brought under the consideration of the commanding officer, and the advisability of having two iron receptacles in each urinal recommended. These have been applied for, and if provided will, I have no doubt, be a decided improvement. The state of some of the wells and sewers was also brought under notice for the purpose of being cleaned. Recommendations.

XXI. Remarks.—In this place I would note the freedom from pneumonia enjoyed by the corps; there were only two cases of the disease during the year. I attribute this to the capital clothing, and the care that is taken of the men to see that, when off duty and at night, they are warmly clad during the cold weather, which at Mardan is very severe. My experience of the disease, as seen in Northern India, leads me to look upon neglect in this respect as the principal, if not the only, cause. It is true that the disease sometimes appears like an epidemic; but, when saying that it is contagious, one must remember the circumstances under which it arises, and how prone the natives are not to take sufficient precautions against extremes of temperature—going about in the cold frosty mornings with the clothes they have been accustomed to wear in June and July. Notwithstanding the unhealthiness of the native troops at Peshawar and Nowshera during the past year, the sickness at Mardan has not been unusually severe. The men have completely recovered from the effects of the intermittent fevers which prostrated them in 1873 and the commencement of 1874, and, in my opinion, could not be in better condition for service than they are at present. Remarks.

Inspected on the 23rd of March by Mr. Banister; he reports as follows:— Inspection.

"The drainage of the fort had, undoubtedly, been improved since my previous visit, but was still defective, and received the contents of the urinaries, which ought to be disposed of in other ways. The barracks also, from their enclosed position along the ramparts, could not but be very indifferently ventilated, and as they were always overcrowded on the return of men from furlough, and notoriously not worth the expense of repair, it seems like the loss of a great opportunity that, on the occurrence of the earthquake, on the night of the 12th of December, which shattered every building to its foundations, except the hospital, the erection of new lines on the open plain should not have been made a pressing and urgent demand." The hospital, as previously reported, is incapable of being made, by any arrangement, a fit habitation for the sick; the arrangements in it were as good as circumstances admitted of, and the equipment was complete.

Digitized by Google

Hazara Mountain Battery—Kohat.

Surgeon-Major J. W. Johnston, M. D., reports as follows:—

Medical Officers.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Abbottabad, April 1866	284·8	·7	5·5
1871 ...	Kohat, March 1871 ...	224·4	1·1	4·2
1872 ...	Ditto ditto	228·6	2·3	3·5
1873 ...	Abbottabad, Feby. 1873	148	1·2	2·9
1874 ...	Ditto ditto	178·3	...	3·1
...	Average	212·82	1·06	3·84
1875 ...	Kohat, March 1875 ..	284·96	1·20	5·65

I. Medical Officers.—The medical charge of the battery devolved on Surgeon-Major Mackertich, 5th Punjab Infantry, from 1st January to 2nd March; Surgeon-Major J. W. Johnston, 4th Punjab Infantry, from 17th March to 20th April, and from 29th October to 31st December. Surgeon Moloney held charge from 21st April to 28th October.

Locations and movements.

II. Location and movements.—The battery was quartered at Abbottabad from 1st January to 2nd March; *en route* to Kohat, from 3rd to 17th March; since the latter date it has been on the strength of the Kohat garrison.

Marches and service.

XII. Marches and service.—The head-quarters marched in course of relief from Abbottabad on 3rd March, reaching Kohat on 17th idem. A detachment of 36 gunners was absent with the Duffla expedition from 1st January to 1st April.

Hospital.

XIV. Hospital.—The new hospital for the accommodation of sick of Hazara and Garrison batteries was finished and occupied in August. Its capacity is 14,675·4 cubic feet, and is supposed to accommodate 14 patients, giving a capacity of 1,050·4 cubic feet per man. It was constructed out of the bungalow formerly inhabited by the Band Master of the Infantry Garrison, and has a large, open, fire place, suitable dispensary, and out-houses.

Sickness, mortality and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the Battery—

Present	136·86
Absent	29·05
Total	165·91

Station.	Period		Strength.	Total number of		Daily average number of sick	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Abbottabad	1st January ...	2nd March ...	127·72	375	1	7·54	293·61	·78	5·9
En route to Kohat ...	3rd March ...	17th „ ...							
Kohat	18th „ ...	31st December							
Detachment with Duffla expedition	1st January ...	31st March ...	36	15	...	·16	169·10	...	·44
Total ...	...	...	136·86	390	1	7·74	284·96	·78	5·65

Number of deaths in hospital 1; out of hospital 1; total 2; per cent. of total strength ... 1·20
„ invalided ... ... 2; „ „ ... 1·20
„ sent on sick leave ... ... 1; „ „ ... ·60
„ of days spent in hospital 2,835; per admission 7·26; per man of total strength ... 17·08
„ „ on sick leave 185; per man ... 185; „ „ ... 1·11
Total temporary loss of service per man of total strength ... 18·19

Principal causes of sickness.

XVI. Principal causes of sickness.—The chief causations of sickness were ague, intestinal fluxes, and rheumatism. Two cases of pneumonia and three of other chest diseases occurred. The chief brunt of the malaria was borne in the four last months of the year.

Mortality.

Two deaths occurred, one in hospital, in February, from pneumonia; one on furlough; cause unknown.

Special observations and remarks.

XXI. Special observations and remarks.—Nine recruits were examined, one was rejected for physical debility. Of the 8 accepted, 5 were Sikhs and 3 Punjabee Mussulmans. The average height of the former was 5 feet 8 inches, and chest circumference 34·2 inches. The latter had an average height of 5 feet 5·1 inches, and a chest girth of 33·7 inches. The Sikhs are in accordance with standard laid down in G. O. No. 270, dated 24th September 1875. The chest girth of Punjabee Mussulmans was 3 inches under the mark.

Inspection.

The Deputy Surgeon-General made his inspection on the 23rd September. He reports that "the barracks, comparatively recently constructed, afforded

Digitized by Google

ample space and had not been overcrowded. The sick were provided with very fair accommodation in a separate building, conveniently situated to the left of the lines. The arrangements were satisfactory. No exception could be taken to the recruits, 6 in number."

No. 4, or Garrison Company of Artillery—Kohat.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Kohat	101·6	4·	5·5
1871 ...	Ditto	126·2	8·2	3·4
1872 ...	Ditto	143·3	1·3	4·5
1873 ...	Ditto	167·8	1·4	6·
1874 ...	Ditto	127·	1·5	3·2
	Average ...	133·18	3·28	4·52
1875 ...	Kohat	160·16	3·30	5·

Medical Officers. *I. Medical Officers.*—Surgeon-Major J. W. Johnston, M. D., has supplied the annual sanitary report of this Garrison Company of Artillery.

Location and movements. *II. Location and movements.*—Two detachments were furnished to the Bunnoo Fort during the year, of an average strength of 20 men.

Lines, &c. The lines, drainage, conservancy, &c., call for no special remarks.

Hospital. *XIV. Hospital.*—Accommodation has, since August 1875, been provided in the new artillery hospital.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the Battery—

Present	51·82
Absent	8·90
Total ...	60·72

Station.	Period.		Strength.	Total Number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Kohat ...	1st January	31st Dec.	37·35	69	1	2·30	184·73	2·67	6·15
Detachment at Edwardesabad	Ditto	12th Feb.	20·03	14	...	·38	97·02	...	1·89
Ditto ...	28th April	3rd Decr.							
Total ...	...	...	51·82	83	1	2·57	160·16	1·92	5·00

Number of deaths in hospital 1; out of hospital 1; total 2;	per cent. of total strength ...		3·30
„ invalided 4;	„ „ ...		6·60
„ sent on sick leave 2;	„ „ ...		3·30
„ of days spent in hospital 943; per admission 11·36;	per man of total strength ...		15·53
„ „ on sick leave 145; per man ... 72·50;	„ „ ...		2·38
Total temporary loss of service per man of total strength		...	17·91

Causes of sickness. *Causes of sickness.*—Malarial diseases and rheumatism were the almost exclusive causes of admission into hospital; there was but one death, which was caused by bronchitis. Regarding the physique of the men of this Garrison Company, Dr. Johnston remarks that "the gunners are old men, deemed unfit, generally from length of service, for field duty."

Deputy Surgeon-General G. Banister reports that the men of the Garrison Battery occupied good quarters in the ravelin of the fort, and the sick were received into the artillery hospital.

Digitized by Google

2nd Regiment, Punjab Cavalry—Kohat.

Medical Officer.

I. *Medical Officer.*—Surgeon-Major G. Farrell continued in charge throughout the year, and has submitted the following report of the regiment:—

Location and movements.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dera Ismail Khan, February 1869 ...	146·	1·2	5·3
1871 ...	Do. ...	129·	2·	4·
1872 ...	Edwardesabad, January 1872 ...	332·9	1·4	7·6
1873 ...	Do. ...	211·4	2·	6·7
1874 ...	Do. ...	182·5	1·8	5·8
	Average ...	200 36	1·68	5·88
1875 ...	Kohat, January 1875	168·66	1·85	5·17

II. Location and movements.—The regiment marched from Edwardesabad to Kohat in January 1875 and remained there till October. It then marched to Delhi to join the camp of exercise, which it reached on the 14th December, remaining there till the end of the year. A detachment of the regiment was stationed at Abbottabad, in Hazara, from the middle of February till September, and a small one, relieved monthly, garrisoned the fort at Bahadur Khel from January till September. These detachments joined head-quarters on the march of the regiment to Delhi, some 90 men being left behind at Kohat.

Lines.

Drainage.

New cavalry lines had been recently built at Kohat, and their situation and construction, in a sanitary point of view, was considered to be good. The natural drainage of the lines is described as being sufficiently free. Latrines were not in use; but, owing to the nature of the ground and the direction of the prevailing winds, Mr. Farrell did not consider that any evil resulted from the men resorting to ground at some distance from their lines for necessary purposes.

Water-supply and clothing.

The water-supply was both abundant and of good quality at Kohat. The clothing was considered to be suited to the wants of the men, and Mr. Farrell had not noticed any deficiency in the bedding or clothing worn by the men off duty. The men have had an average of four nights off duty.

Marches and service.

XIII. Marches and service.—The regiment marched to the camp of exercise at Delhi in October 1875. The march occupied two months, and the general health of the men was in the main good, though at the early part of the march, there was some tendency to fevers, and throughout, as also at Delhi, bowel complaints prevailed. But these diseases were of a mild character and had no marked effect on the general health of the men.

Hospital.

XIV. Hospital.—A small hospital for the use of the cavalry adjoins the regimental lines at Kohat. It is built on the standard plan, is kept in good repair, and meets every reasonable requirement.

Sickness, mortality, and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the regiment—

Present ...	...	...	...	...	...	374·13
Absent ...	...	...	...	...	...	110·25
				Total	...	484·38

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters Edwardesabad	1st Jan. ...	28th Jan. ...	292·11	509	2	15·06	174·21	·68	5·1
Ditto *en route* and at Kohat ...	29th Jan. ...	12th Oct. ...							
Ditto *en route* to Delhi ...	13th Oct. ...	14th Dec. ...							
Ditto at Delhi ...	15th Dec. ...	31st Dec. ...							
Detachment, Kohat ...	1st Jan. ...	2nd Feb. ...	132·87	23	1	8·18	191·50	8·31	6·08
Ditto Bahadur Khel	1st Feb. ...	10th Sept. ...	22·34	5	...	·19	29·45	...	·85
Ditto Abbottabad ...	6th Feb. ...	12th Sept. ...	55·50	17	...	1·06	55·70	...	1·90
Ditto Kohat ...	13th Oct. ...	31st Dec. ...	99·84	77	...	12·65	351·91	...	12·67
Total ...	...	...	374·13	631	3	19·36	168·66	·80	5·17

Number of deaths in hospital 3; out of hospital 6; total 9; per cent. of total strength			...	1·85
„ invalided	19;	„ „ ...	...	3·92
„ sent on sick leave	10;	„ „ ...	...	2·06
„ of days spent in hospital 7,087; per admission 11·22; per man of total strength			...	14·63
„ „ „ on sick leave 1,103; per man ... 110·30;		„ „ ...	...	2·27
Total temporary loss of service per man of total strength ...			...	16·90

Principal causes of sickness.

XVI. Principal causes of sickness.—These have been fevers, bowel complaints, and the various forms of contusions. Over 50 per cent. of the admissions were due to the various types of fever, some 10 per cent. to diarrhœa and dysentery, and nearly the same amount to contusions and injuries of different kinds. The type of fever most prevalent was quotidian ague,

Digitized by Google

comprising nearly four-fifths of the total admissions from fever, the remaining fifth being composed mainly of tertian ague and a few cases of remittent fever. The number of cases of fever of all kinds admitted this year falls nearly 50 short of the number admitted in 1874. This may be due possibly to the greater healthiness of Kohat over Edwardesabad, where the regiment was stationed in 1874, and to the removal of the regiment from the frontier during the last three months of the year. The admissions from diarrhœa and dysentery last year were double what they were in 1874. They chiefly occurred during the march to and at Delhi. The attacks were generally mild and amenable to treatment, and were probably, in the main, owing to the cold at Delhi and the bad water there and *en route*. The contusions and injuries number much the same as they did in 1874 and require no remarks.

Principal causes of mortality.

XVII. Principal causes of mortality.—Two deaths occurred in the regimental hospital at head-quarters, one owing to fatal collapse, for which no sufficient cause was diagnosed during life or after death by *post-mortem;* the second was due to remittent fever, complicated with jaundice and enlarged spleen, and occurred on the march to Delhi. One death took place in the detachment hospital at Bahadoor Kheyl from pneumonia. The total number of deaths in hospital was 3 as against 4 in 1874. Six men died out of hospital—at their homes.

Inspection.

Mr. Banister made his inspection of this regiment on the 22nd September, and he reports that on that date the lines "were in excellent order." The hospital, a comparatively new building, was suitable in every respect, and had appropriate out-offices, including two detached wards for infectious diseases. The arrangements in it could not have been improved upon, and the equipment was thoroughly complete.

The 32 recruits, though not first class, were tolerably good.

4th Regiment, Punjab Infantry—Kohat.

Medical Officers.

I. Medical Officers.—Surgeon-Major J. W. Jhonston, M. D., was in medical charge throughout the year and reports as follows:—

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Kohat, Feby. 1869 ...	247·3	2·4	6·1
1871 ...	Ditto ...	234·9	3·7	4·5
1872 ...	Abbottabad, Nov. 1871	127·5	2·1	3·2
1873 ...	Ditto ...	110·5	·8	2·1
1874 ...	Kohat, Dec. 1874 ..	131·9	1·3	2·5
	Average ...	170·42	2·06	3·68
1875 ...	Kohat ...	254·67	·93	4·51

Location and movements.

II. Location and movements.—The head-quarters of the regiment was at Kohat. Three detachments, of an average strength of 59·85, were detatched to Bahadur Khel outpost for the following periods:—

18th January to 8th February; 3rd July to 7th September; and from 3rd November to 31st Dec.

Lines, &c.

There was no change in the sanitary conditions under which the men of this regiment were placed, nor is any special remark called for as regards the lines, drainage, conservancy, and water-supply. Dr. Johnston considers that the sepoy on his present pay cannot feed himself so as to preserve his physique and his health at that standard which will ensure him the greatest immunity from disease. A military caped cloak has been sanctioned for the men instead of the choga, in consequence of the insufficient protection to the chest which the latter covering afforded. The duty was not severe; each man had on the average 4·77 nights in bed out of 6·05. In the cold weather, the ventilation of the hospital was considered to have been much too free, and the allowance of two maunds of firewood with the present stove system could not supply sufficient radiant heat to raise or maintain the temperature of the hospital at a proper standard during the cold weather which is experienced at Kohat; however, Dr. Johnston writes that as the executive engineer has been authorized to introduce a new stove system, he is in hopes that the question of heating the hospital sufficiently will soon be settled.

Sickness, mortality, and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the regiment—

Present	623·14
Absent	122·08
Total	745·22

Digitized by Google

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Kohat ...	1st Jan. ...	31st Dec. ...	594·75	1,528	4	27·23	256·91	·67	4·57
Detachment at Bahadur Khel	18th Do. ...	8th March ...	59·85	59	...	2·29	203·86	...	3·63
Ditto ...	3rd July ...	7th Sept. ...							
Ditto ...	3rd Nov. ...	31st Dec. ...							
Total ...	...	...	623·14	1,587	4	28·14	254·67	·64	4·51

Number of deaths in hospital 4; out of hospital 3; total 7; per cent. of total strength		...	·93
„ invalided	25; „ „	...	3·36
„ sent on sick leave	5; „ „	...	·67
„ days spent in hospital 10,272; per admission 6·47; per man of total strength		...	13·78
„ „ „ on sick leave 607; per man ... 121·4; „ „		...	·81
Total temporary loss of service per man of total strength		...	14·59

Principal causes of sickness.

XVI. Principal causes of sickness.—It appears that from a strength almost equal to what it was in 1874, the admissions into hospital have been 759 in excess during 1875; but the mortality was less by 4. Malarial and bowel diseases gave more admissions into hospital than in 1874, and Dr. Johnston considers their preponderance to be due to the regiment being quartered in an area in which they prevail endemically. Dr. Johnston considers that the initial predisposing cause of frontier epidemic pneumonia has yet to be defined.

Mortality.

There were 7 deaths, 4 in hospital and 3 while absent from the regiment. The former were caused by ascites, enteric fever, and pneumonic collapse in a case of apparently uncomplicated ague and dysentery.

Vaccination.

The regiment may be considered as almost thoroughly protected against small-pox. Out of 45 recruits enlisted during 1875 only 4 were found to be unprotected, and they were vaccinated.

Recommendations.

XX. Recommendations.—These were chiefly, that the regimental water-tank reservoir be cleaned weekly; that the men be urged to present themselves at hospital *at once* if pain in the chest, cough, or fever attack them. A number of minor suggestions were verbally made and were all carried out.

Special observations.

XXI. Special observations.—The number of recruits examined was 74; of these 67 were approved and 7 rejected.

By caste, the passed recruits were—

Sikhs	5
Pathans	38
Punjabee Musalmans	12
Hindoostanis „	1
Dogras	6
Punjabee Hindoos	4
Poorbeahs	1

Only one Hindoostani Musalman was entertained as a band boy,—height 4 feet 11 inches, chest girth 30 inches. This is an inch and a half below the authorised standard, which for lads of all castes is, by the same general order, from 16 to 20 years, 35·5 inches and 22 years, 32·5 inches; but the lad has a good physique and is developing. Taking Dogras and Sikhs, I found their average height 5 feet 7·1 inches and chest girth 33·3 inches. The height accords with standard, but the chest circumferences is 2 inches below the mark. The men are, however, well developed and of good physique. I think the standard chest girth is too high for Dogras, Hindus, and Hindoostani Musalman lads; likewise a shade in excess for the same class of adults, Dogras in particular. I make these remarks because the recruiting fields of regiment generally run pretty much in a steady groove, and an exact adherence to the letter of the law, without a limited plus and minus line, would lead to the rejecting of men who are *en famille* in the regiment and have the making of good soldiers in them.

Inspection.

Inspected by Deputy Surgeon-General G. Banister on the 23rd September 1875. He reports that the lines at Kohat cover a large area of high sloping ground to the north-west of cantonments, and the barracks are well separated, freely ventilated, spacious, and furnished with doors and verandahs. Mr. Banister found everything in admirable order on the day of his inspection. This regiment had maintained a very fair standard of health while stationed at Abbottabad, but the change to Kohat had not proved beneficial, as at

Digitized by Google

the end of the year, the admissions into hospital numbered 1,587 against 828 in 1874. The hospital arrangements were satisfactory, the equipment fairly complete, and all the books had been written up to date.

1st Regiment Sikh Infantry—Kohat.

I. Medical Officers.—Surgeon T. Moloney, M. D., had been in medical charge from the 20th of February until the end of the year, and makes the following report :— Medical officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dera Ismail Khan, Nov. 1868, from Kohat ...	145·7	1·8	3·9
1871 ...	Dera Ismail Khan, Nov. 1868, from Kohat ...	112·6	1·9	3·6
1872 ...	Edwardesabad, Feb. 1872	187·5	1·8	6·
1873 ...	Ditto ...	174·9	2·3	7·1
1874 ...	Ditto ...	180·9	1·5	6·7
	Average ...	160·32	1·86	5·52
1875 ...	Kohat, Feb. 1875 ...	132·29	3·26	5·07

II. Location and movements.— The head-quarters was stationed at Edwardesabad from 1st to 27th January. It then marched to Kohat in the 28th of the same month, arriving at that station on the 2nd of February. There were two detachments,—one at Bahadur Khel, from 3rd May to 9th July, and the other at Lahore, from the 24th of November till the 31st of December 1875. Location and movements.

V. Lines.—The lines are those which, in the last garrison, were occupied by the 4th Sikh Infantry, and which were described in the report of that regiment for 1873. They are kept in a fair state of repair. The only improvements made during the year have been the construction of a new quarter-guard and a bathing tank, this latter being built at the expense of the men of the regiment. Lines.

VI. Drainage.—There has been no alteration during the year. Drainage.

VII. Latrines.—There are no latrines for the troops. I believe Government has determined on giving the "trench" system a trial; but I am not aware when this trial will be afforded. The hospital latrine is worked on the "dry-earth" system and works fairly well. Latrines.

VIII. Water-supply.—The water-supply is good and sufficient; there is nothing to add to the information already given in previous reports, *vide* report of 4th Sikhs for 1872. Water-supply.

IX. Diet.—Food grains are comparatively cheap, and procurable in abundance at Kohat; vegetables too, in season, are fairly plentiful and moderate in price. Very few cases of underfeeding occur; those suspected are put under close observation. Diet.

X. Clothing.—The men are well and comfortably clad. Native shoes or chupplies are worn on all occasions, and but few cases of blistered feet occur. There has been no change in the uniform during the year. Clothing.

XI. Duty.—In the hot weather the duty is light enough, but in the cold weather it is rather heavy, owing partly to the number of men in hospital and partly to the number absent on command or duty of some sort. Nights in bed, three in six. Duty.

XII. Amusements.—There is but little time for amusement. One afternoon in each week, however, is set apart for gymnastics, running, jumping, &c., in which the men are encouraged. The recruits too are trained in gymnastics for an hour daily. Amusements.

XIII. Marches.—On the 28th January 1875, the regiment marched in course of relief from Edwardesabad for Kohat, distant five marches, about 84 miles; the road leads through a bleak and uninteresting country. Surgeon-Major Holmes was the medical officer in charge of the regiment at that time. Marches

XIV. Hospital.—The hospital accommodation consists of two large wards in the station hospital which, in the last garrison, were occupied by the 4th Sikh Infantry; there are also two small wards for the treatment of special cases of pneumonia, &c. The accommodation is ample except, indeed, in seasons of great sickness. The warming is at present defective, but, I believe, the construction of an additional stove for each large ward has been sanctioned, the effect of which will be to distribute the heat more equally; the ventilation is ample. The lighting has lately become much improved, a hanging lamp for each large ward having been supplied by the commissariat. The state of repair of the hospital generally is satisfactory. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality, and invaliding.

Present	573·18
Absent	162·78
Total	735·96

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total Number of. Admissions.	Total Number of. Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Per cent. of Strength per annum. Deaths.	Per cent. of Strength per annum. Daily average sick.
Head-quarters at Edwardesabad...	1st Jan. ...	27th Jan. ...	554·77	746	18	28·90	132·6	2·34	5·20
„ on the march ...	28th Jan....	1st Feb. ...							
„ at Kohat ...	2nd Feb. ...	31st Dec. ...							
Detachment at Bahadur Khel ...	3rd May ...	9th July ...	59	2	...	·19	18·19	...	·32
„ at Lahore ...	24th Nov. ...	31st Dec. ...	85·18	11	...	1·14	122·22	...	1·69
Total ...	.....	.....	573·18	759	18	29·08	132·29	2·26	5·07

Number of deaths in hospital 18; out of hospital 11 ; total 24 ;	per cent. of total strength	...	3·26
„ invalided 35;	„ „	...	4·75
„ sent on sick leave 16;	„ „	...	2·17
„ of days spent in hospital 10,616; per admission 13·98 ;	per man of total strength	...	14·42
„ „ „ on sick leave 1,634; per man 102·12;	„ „	...	2·22
Total temporary loss of service per man of total strength		...	16·64

Principal causes of sickness.

XVI. Principal causes of sickness.—Of those diseases which cause the greatest number of admissions into hospital, 61·55 per cent. are due to malarial fevers, 12·02 to bowel complaints (dysentery, diarrhœa, and colic), 4·62 to chest disorders, 3·96 to rheumatic affections, 3·30 to boils, 2·11 to contusions, and 1·71 to venereal diseases. It will thus be seen that malarial fever causes by far the largest number of admissions into hospital, though it is endemic in Kohat, and cases occur at all times of the year, yet the autumn months are those in which it is most prevalent. It commences usually about the last week in August or 1st of September and reaches its climax in October; it then gradually wanes till the end of December, when cases become comparatively few. At first it assumes a mild quotidian type; but later on the tertian and quartan types become most frequent; this latter is often very rebellious to treatment, is almost invariably accompanied by enlargement of the spleen, and change of air seems the only effectual remedy; this, I believe, seldom fails to effect a cure. No race or class seems to enjoy immunity from this disease.

Bowel complaints.

Bowel complaints give the next highest number of admissions; they are usually of a mild description and readily amenable to treatment. One or two large doses of ipecacuanha seldom fails to effect a cure in the cases of dysentery which one meets with in this climate.

Chest affections.

Chest affections come next on the list; of these, pneumonia is by far the most fatal, and whether it occurs alone or as a complication of some type of malarial fever, its effect is equally destructive; few patients recover, and those who do, do so imperfectly. Cases of chronic bronchitis and chronic rheumatism are of frequent occurrence in the cold weather, and it is to these affections that much of the invaliding is due.

Causes of mortality.

XVII. Causes of mortality.—There have been thirteen deaths in hospital during the year; of these, four were due to remittent fever, three to intermittent fever, three to pneumonia, one to chronic pneumonic phthisis, one to splenitis, and one to general debility.

Vaccination.

XIX. Vaccination.—None. There have been no cases of small-pox in the regiment during the year, nor, I believe, has more than one case occurred within the past ten years; most of the men have either been inoculated or have had the disease naturally.

Inspection.

Mr. Banister reports that this regiment arrived at Kohat on the 2nd February, after three sickly years' service at Edwardesabad, and had benefited by the change. The lines, although on low ground, were well drained and in good order; but the barracks were overcrowded, badly ventilated, and needed the addition of doors and verandahs, which he considered to be indispensably necessary in such a climate for protection against extremes of temperature in summer and winter. The garrison hospital had been re-roofed, and, on the completion of other repairs, then in progress, would afford excellent accommodation for the sick of the three infantry regiments, although the massing together of so many diseased persons should be strongly remonstrated against. The huge building is well ventilated and fairly lighted, but inadequatety warmed, as there is only one stove, of faulty construction, in each ward, measuring 27,740 cubic feet. Mr. Banister was much pleased with the arrangements, cleanliness, and order which prevailed.

The recruits, 44 in number, were strong and promising, except one, who was over aged.

Digitized by Google

3rd Regiment, Sikh Infantry—Kohat.

I. Medical Officers.—The medical charge of the regiment was held by Surgeon R. Power from 1st January to 18th April; by Surgeon-Major J. W. Johnston, M. D., F. R. S., from 19th April to 13th September; by Surgeon C. J. McCartie, M. D., from 14th September to the end of the year. The last named officer has prepared the annual sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dera Ghazi Khan, December 1868, from Peshawur	164·9	3	4·4
1871 ...	Ditto ditto	158·6	2·6	4·1
1872 ...	Dera Ismail Khan, February 1872 ...	207·9	2·8	4·9
1873 ...	Ditto ditto ...	158·4	2·5	4·
1874 ...	Ditto ditto ...	198·6	2	4·3
	Average ...	177·68	2·58	4·34
1875 ...	Kohat, January 1875 ...	209·96	3·27	3·90

II. Location and movements.—The regiment was stationed at Dera Ismail Khan from 1st to 2nd of January. From the 3rd to the 14th, it was on the march to Kohat, where it remained until the end of the year. Detachments of 70 and 21 men remained from 1st to 2nd of January at Zam and Jatta, respectively, to which they had been posted during part of the end of last year. A detachment of 59, and subsequently one of 61 strong was furnished, each for two months, to Bahadur Khel, doing duty there in turn with the other two infantry regiments in the station. Small detachments were also furnished in turn to Fort Garnett, Kohat, and Mohomudzai, in its neighbourhood. Location and movements.

V. Lines.—In each line there are two kutcha built blocks facing each other. In one block are four large rooms for the accommodation of the men and a small end one for the pay havildar; in the opposite are four similar rooms and a small one for arms. There are no doors to any of the large rooms and many of the doorways have been built up, leaving, in some cases, only one entrance to a space over sixty feet long. Besides the doorways and a small hole at the gables in the end rooms, there are no other means of ventilation. The space between the houses is much too narrow and there are no verandahs. In consequence of these faulty arrangements, these houses are too hot in the summer and too cold in the winter. During the hot weather, the men slept in the air, and in June and July they suffered largely from fever, while the other regiments in the station were comparatively free from it. Tents were then spread between the lines for them to sleep under, and the admissions for fever began sensibly to diminish. The lines are kept clean and in good repair. Each man has an average cubic space of about 564 cubic feet. Lines.

VI.—Owing to the elevation of the station, and the number of streams which pass through it, the natural drainage is good and every means have been taken to assist it as far as possible. As there are no latrines in use, the men have to resort to the fields for the purposes of nature. Spring water is brought into the station in a covered aqueduct and is then stored in tanks in the lines and at the hospital. The medical officer states that "it is impure enough to be much improved to the taste by filtration." No cases of under-feeding had been noticed. Food of all kinds was moderately cheap. The clothing of the men has been unchanged; ammunition boots appear to cause blisters and abrasions of the feet. Mr. McCartie thinks that the winter clothing is insufficient for the men when on night duties, and that additional warm clothing should be given them. The duty is stated not to have been over severe. Each man had on the average nearly 4 nights in bed. Drainage. Conservancy. Under-feeding. Clothing. Duty.

XIII. Marches and service.—The regiment made one march during the year from its former head-quarters at Dera Ismail Khan, leaving that station on 3rd of January and arriving in Kohat on the 15th. Marches and service.

XIV. Hospital.—The hospital has been described in former reports. Two large wards and four small rooms are allotted to the regiment. In August and part of September one of the wards was undergoing repairs and many patients had to be treated in one of the wards of the 1st Sikh Infantry and in the verandahs. Except at this time, there was sufficient accommodation for the sick of the regiment. The hospital is now in a good state of repair. There is a stove in each ward burning two maunds of wood a day during the cold weather. This only supplies heat to its immediate neighbourhood. Hospital.

XV. Sickness, mortality, and invaliding.—Strength of the regiment— Sickness, mortality, and invaliding.

Present	603·92
Absent	129·29
Total	733·21

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Dera Ismail Khan and Kohat.	1st January ...	31st December	577·35	1,239	21	22·50	214·60	3·63	4·01
Detachment at Bahadur Khel.	3rd March ... 4th September	7th May 8th November	60·	29	1	1·07	133·70	4·61	1·78
Total ...	...	...	603·92	1,268	22	23·57	209·86	3·64	3·90

Number of deaths in hospital 22; out of hospital 2; total 24; per cent. of total strength ... 3·27
" invalided ... ... 20; " " ... 2·72
" sent on sick leave ... ... 12; " " ... 1·63
" of days spent in hospital 8,604; per admission 6·78; per man of total strength ... 11·73
" " on sick leave 1,250; per man 104·16; " " ... 1·70

Total temporary loss of service per man of total strength ... 18·43

Sickness.

There was an increase of 4·7 fever cases, of 1·18 pneumonia cases, and of 1·05 bronchitis cases per cent. of admissions over last year. On the other hand, blistered feet were more than twice as frequent at Dera Ismail Khan; this is probably to be accounted for by the larger amount of marching done by the regiment to supply detachments around that station. Ulcers and boils were three times as numerous last year, but there were none of the frontier sores here which Dr. Power described in his report of the regiment for 1874.

Principal causes of mortality.

XVII. Principal causes of mortality.—11 deaths were due to pneumonia, 4 to intermittent fever, 3 to remittent fever, 1 to dysentery, 1 to splenitis, and 1 to peritonitis, 1 to secondary syphilis. Two men died while away from the station—cause unknown. 41 cases of pneumonia were treated during the year, and these figures show that 26·82 per cent. of those who suffered from the disease died. Last year 27 cases were treated, of whom 6 died, giving a mortality of 22·22 per cent. of those patients.

Inspection.

The Deputy Surgeon-General made his medical and sanitary inspection on the 23rd September. The regiment was occupying the centre infantry lines, the worst in the station, owing to their confined position, faulty construction, and inadequate space; and on the day of inspection, they were in very bad repair; but nothing could be done to improve them, pending the issue of a recommendation, which Mr. Banister states he warmly supported, for their entire removal and reconstruction on another site. Owing to the wards allotted to the regiment being under repair, the sick had to be accommodated in other parts of the garrison hospital, and this arrangement gave rise, for the time being, to unavoidable crowding.

The Deputy Surgeon-General remarks that he did not think much of the 84 recruits; several were over aged, many were very inferiorly developed, and the minority only of the proper stamp.

No. 2.—Punjab Light Field Battery—Edwardesabad.

Medical Officers.

I. Medical Officers.—Surgeon Power held charge from the 1st to the 2nd of January. Surgeon Jackson took it over till February 26th, when he was relieved by Surgeon Bookey, who retained the charge for the remainder of the year, and by whom this report was prepared.

Year.	Station.	Per cent. of Strength. Admissions.	Deaths.	Daily sick.
1870 ...	Edwardesabad, Dec. 1868	300·	2·2	6·5
1871 ...	Ditto ...	240·7	·9	6·6
1872 ...	Dera Ismail Khan, Jany. 1872 ...	269·3	1·8	7·5
1873 ...	Ditto ...	219·5	·9	4·4
1874 ...	Ditto ...	229·6	...	6·2
	Average ...	251·82	1·16	6·24
1875 ...	Edwardesabad, Jany. 1875	213·12	1·88	4·07

Location and movements.

II. Location and movements.—The head-quarters was at Dera Ismail Khan till the 29th, when the battery marched to Edwardesabad, starting on the 29th of January and arriving on the 3rd of February.

Lines, &c.

There was not anything in connection with the sanitary condition of the lines, &c., which calls for special remark. The duty has not been excessive; each man had on the average 5·4 nights in bed out of 7. Malarial fevers and bowel complaints were the chief causes of admission into hospital.

Digitized by Google

There were no deaths in hospital; but 2 men died when absent from the battery,—1 from phthisis and 1 from fracture of the ribs. Mortality.

This battery was inspected by Mr. Banister on the 26th November, and he reports that on that date the lines were in excellent order, and the barracks, which were supplied with doors and verandahs, afforded all that was desirable in space and ventilation. The hospital, although rather too small, was in other respects suitable enough and serviceably equipped. The recruits, 5 in number, were strong and healthy. Inspection.

XV. Sickness, mortality and invaliding.—Strength of the Battery— Sickness, mortality, and invaliding.

Present	84·46
Absent...	21·95
Total	106·41

Station.	Period.		Strength.	Total Number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Dera Ismail Khan and Edwardesabad.	1st January	31st December.	84·46	180	...	3·44	213·12	...	4·07

Number of deaths in hospital 0; out of hospital 2; total 2; per cent. of total strength ... 1·88
„ invalided ... ... 2; „ „ ... 1·88
„ of days spent in hospital 1,259; per admission 6·9; per man of total strength ... 11·83

Total temporary loss of service per man of total strength ... 11·83

5th Regiment, Punjab Cavalry—Edwardesabad.

I. Medical Officers.—The medical charge of the regiment has been held throughout the year by Surgeon W. Jackson, by whom the annual sanitary report of the regiment has been submitted. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dehra Ghazi Khan, February 1869 ...	251·2	·8	5·9
1871 ...	Ditto ditto ...	191·9	1·4	6·8
1872 ...	Dera Ismail Khan, February 1872 ...	175·5	8·4	5·2
1873 ...	Ditto ditto ...	195·9	1·4	6·
1874 ...	Ditto ditto ...	200·9	1·02	7·4
	Average	203·1	2·6	6·3
1875 ...	Edwardesabad, 20th January 1875 ...	221·53	1·33	6·17

II. Location and movements.— From January 1st to 19th the regiment was stationed at Dera Ismail Khan, and marched in the ordinary course of relief for Edwardesabad on the 20th January, arriving at that station on the 27th January, and remaining there until the end of the year. Location and movements.

The following detachments were furnished:—

Zam,—from January 1st to January 22nd	Strength	80
Jatta,—from January 1st to January 22nd	„	77·82
Jani Khel,—from February 20th to December 31st...	„	40
Bahadur Khel,—from September 7th to December 31st	„	22
His Honor the Lieutenant-Governor's Camp from 13th to 22nd January ...	„	50

IV. Climate.—Generally humid, owing to the extensive irrigation of the land surrounding cantonments. At the end of January and beginning of February there were sharp frosts at night; heavy rain in February, and two or three storms in March. April was hot, but storms occurred again in May and June. After the middle of June no rain fell until September, and the weather during that time was very hot. Storms also occurred in October, November, and December; but the weather continued mild up to the end of the year. Climate.

V. Lines.—The lines were taken over from the 2nd Punjab Cavalry and are described in report of 1st Punjab Cavalry for 1869. Many of the camp-followers' houses to the east of the bazaar and rear of the lines have been knocked down and the ground levelled, thus affording better ventilation. Lines.

Digitized by Google

Drainage. *VI. Drainage.*—The defective surface drainage has been somewhat improved during the year, especially in the neighbourhood of the regimental bazaar.

Conservancy. *VII. Conservancy.*—A rough latrine has been built to the north of the lines and is used by most of the men. The stable litter is removed daily from the lines.

Water-supply *VIII. Water-supply.*—A well has been sunk at the north-east corner of the lines. At first the water was saturated with lime, which was in a great measure owing to the cement used in the construction of the well, but the water is still hard and appears naturally to contain a considerable quantity of lime. The water is 180 feet from the surface and is not likely to be much used, except in the hot weather, when the irrigation water which is brought from the Koorum is muddy. The horses are watered in the lines by bhistees.

Diet. *IX. Diet.*—Grain and most articles of food are very cheap in this station, and the men generally appear well nourished. The regimental bazaar is good and always well supplied.

Duty. *XI. Duty.*—The duty during the year has not been very heavy. Nights in bed 5·09.

Amusements &c. *XII. Amusements and occupation.*—There is very little in the way of amusement or occupation beside the ordinary regimental duties.

Marches. *XIII. Marches.*—The regiment marched from Dera Ismail Khan on the 20th January and arrived at Edwardesabad on the 27th. The nights at this time were very cold, but there was very little sickness among the men.

Hospital. *XIV. Hospital.*—The hospital has been described in previous reports. The accommodation has been quite sufficient during the year, except for a short time in November.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	385·95
Absent	104·53
Total	490·48

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters, Dera Ismail Khan	1st Jan. ...	20th Jan. ...	243·5	11	1	12·66	82·45	7·49	5·19
Head-quarters on line of march	21st „ ...	26th „ ...	319·9	20	...	19·28	380·21	...	6·02
Head-quarters, Edwardesabad	27th „ ...	31st Dec. ...	342·36	770	4	23·08	242·16	1·25	6·74
Detachment, Zam ...	1st „ ...	22nd Jan. ...	30	...	...	...	...	...	...
„ Jatta ...	1st „ ...	22nd „ ...	77·82	4	...	1·42	85·2	...	1·82
„ Jani Khel ...	20th Feb. ...	31st Dec. ...	40	35	...	·86	101·71	...	2·15
„ Bahadur Khel	7th Sept. ...	31st „ ...	22	15	...	·98	214·52	...	4·45
Total ...	...	...	385·95	855	5	23·83	221·53	1·29	6·17

Number of deaths in hospital 5; out of hospital 4; total 9; per cent. of total strength			... 1·83
„ invalided	13;	„ „	... 2·65
„ sent on sick leave	1;	„ „	... ·20
„ of days spent in hospital 8,697; per admission 10·17; per man of total strength			... 17·73
„ „ on sick leave 338; per man	338;	„ „	... ·68
Total temporary loss of service per man of total strength			... 18·41

Principal causes of sickness. *XVI. Principal causes of sickness.*—The admissions have been somewhat in excess of those for 1874 owing to the greater prevalence of periodic fevers, but the daily average sick has been less than that of last year. Periodic fevers furnished more than half the total admissions. The type was generally quotidian, but towards the close of the year, a good many cases of quartan ague occurred with hypertrophy of spleen. Dysentery and diarrhœa furnished about 5 per cent. of the admissions. Skin diseases and injuries each about 11 per cent.

Principal causes of mortality. *XVII. Principal causes of mortality.*—There were five fatal cases during the year at the head-quarters' hospital. Three of these cases were transferred from detachments to head-quarters.

Dysentery	1	Pneumonia	1
Hemiplegia	1	Remittent fever	1
Anæmia	1		

Epidemics. *XVIII. Epidemics.*—None in the regiment. In February and March typhus fever prevailed in the jail close to the cavalry lines, but no cases occurred in the regiment. Measles and erysipelas also prevailed amongst the civil population in March and April.

Vaccination. *XIX. Vaccination.*—All the children living in the lines, not protected by vaccination or previous attack of small-pox, have been vaccinated during the year.

Digitized by Google

Inspected on the 24th November. Mr. Banister reports that the lines had been well looked after, and the hospital and its surroundings were in excellent order; there was a good supply of medicines, instruments, and other necessaries. Of 30 recruits, three are stated to have been decidedly over aged. Inspection.

3rd Regiment, Punjab Infantry—Edwardesabad.

I. Medical Officers.—Surgeon H. Mallins, M. B., held medical charge of the regiment throughout the year, and has submitted the annual sanitary report. Medical Officers.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Abbottabad, December 1868, from Kohat.	209·5	1·6	5·
1871 ...	Ditto Ditto ...	137·9	2·5	3·4
1872 ...	Kohat, December 1871	238·2	5·6	5·1
1873 ...	Ditto	158·4	1·5	3·
1874 ...	Ditto	147·	1·08	2·9
	Average	178·2	2·46	3·88
1875 ...	Edwardesabad, January 1875.	210·05	2·56	4·81

II. Location and movements.— The regiment was stationed at Kohat from the 1st to the 17th of January, on which latter date it marched for Edwardesabad, where it has been located from 23rd January to the end of the year. Detachments were furnished to the outposts of Latammar, Jani Khel,—Kurram, and to the sanitarium, Sheik Budin, and for a short time, early in the year, to Bahadur Khel. Location and movements.

V. Lines, &c.—The lines are in the fort (Dhuleepghur). They are clean, but their construction is very faulty, being much too low and ill-ventilated. When the full strength of a company is present, as happens when the musketry instruction is going on, there is decided overcrowding. Lines, &c.

VI. Drainage.—The drainage of the lines and the fort is satisfactory, having been much improved in the early part of the year, by the construction of surface channels. Drainage.

VII. Conservancy.—There is no change to be reported under this heading. The same most unsatisfactory and grossly insanitary state of things continues as noticed in previous reports. The cantonment is surrounded nearly on every side by fields, whose surface is generally covered with high crops and perpetually irrigated. Those closest to the lines of the different regiments are, as might be supposed, resorted to for purposes of nature. Those used by the 3rd Punjab Infantry are within 50 yards from the Fort and emit a constant stench, generally more perceptible towards evening. It is imposible that this station can ever become even tolerably healthy as long as it continues, as at present, to lie bathed in an atmosphere of fœcal miasm. The hospital latrine is in the same unsatisfactory condition as noticed in previous reports. Conservancy.

VIII. Water-supply.—The water of the fort well is only used by the men in the hot weather. In the cold season they drink the water as it runs along uncovered pucka channels through the fort. The water comes from the river Kurram; the channel by which it is conveyed commences about two miles above the cantonment; its whole course is through cultivated fields, and by the time it arrives in the station the water must teem with impurities. Water-supply.

IX. Diet.—The men diet themselves. The bazaar is clean and well supplied. No case of under-feeding has come to notice during the year. Diet.

X. Clothing.—For summer, light kharki uniform; in the cold weather, posteens and chogas—native shoes. The clothing is suitable to the climate. Clothing.

XI. Duty and employment.—The duty has not been excessive. Nights in bed 5·20 in 7. Duty &c.

XII. Exercise.—There is no special form of exercise or amusement. Exercise.

XIII. Marches and service.—The regiment marched from Kohat on the 17th January, making six marches in all to this station, which was reached on 23rd January. The few admissions into hospital on the march were chiefly for blistered feet. The men were paraded for each march at 4 A. M., when it was freezing hard. The cold was severe and seemed to benumb the men at first. I consider this very early marching inadvisable. Marches and service.

XIV. Hospital.—The unsatisfactory state of the latrine and of the servants' houses, as noticed in previous reports, still remains unchanged. There is no dead-house. Hospital.

XV. Sickness, mortality, and invaliding.—Strength of the regiment— Sickness, mortality, and invaliding

Present	598·42
Absent	141·41
Total	739·83

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total Number of Admissions.	Total Number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-Quarters at Kohat.	1st January ...	17th January ...	568·80	1,232	9	28·39	216·59	1·59	4·99
On the march ...	18th „ ...	23rd „ ...							
At Edwardesabad ...	23rd „ ...	31st December							
Detachment at Bahadur Khel.	1st „ ...	20th January ...	59	6	...	2·55	185·75	...	4·32
„ at Jani Khel	2nd March ...	2nd April ...	35	11	...	0·33	78·57	...	·94
	2nd May ...	2nd June ...							
	1st July ...	29th July ...							
	1st September	2nd October ...							
	2nd November	23rd November							
„ at Sheik Budin	28th April ...	4th July ...	71	8	...	0·86	60 51	...	1·21
Total ...			598·42	1,257	9	28·82	210·05	1·50	4·81

Number of deaths in hospital 9; out of hospital 10; total 19; per cent. of total strength ... 2·56
„ invalided ... ... 25; „ „ ... 3·37
„ sent on sick leave ... ... 10; „ „ ... 1·35
„ days spent in hospital 10,510; per admission 8·36; per man of total strength ... 14·20
„ „ on sick leave 1,165; per man ... 116·50; „ „ ... 1·57
Total temporary loss of service per man of total strength ... 16·77

Principal causes of sickness.

XVI. Principal causes of sickness.—Intermittent fever, bowel and lung diseases have produced the greater number of admissions. The following table shows how the health of the regiment has deteriorated since it left Kohat :—

	Number of admissions. 1874.	1875.
Intermittent fever	547	804
Diarrhœa	51	59
Dysentery	18	44
Bronchitis	14	28
Pneumonia	11	12

Mortality.

XVII. Principal causes of mortality.—Pneumonia, as usual, was the cause of most of the deaths.

Inspection.

Mr. Banister reports that he inspected this regiment on the 26th November, and that the barracks, which are inside the fort enclosure, were very close, inadequately ventilated, and always more or less over-crowded. The hospital is a large T shaped building, also within the entrenchment, and most objectionably hemmed in and encroached upon by servants' houses, &c., and by a very offensive latrine, which ought to be cleared away, and perhaps may soon be, as a project is before the authorities for enlarging this part of the fort and opening out a space around the hospital. The equipment necessary for the proper treatment of the sick needed no additions.

Of the 64 recruits, 5 were considered to be over aged and several others were inferiorly developed.

6th Regiment, Punjab Infantry—Edwardesabad.

Medical Officer.

I. Medical Officer.—Surgeon J. T. B. Bookey held medical charge of the regiment from the 27th of February until the end of the year and reports as follows :—

Location and movements.

Year.	Station.	Per cent. of Strength. Admissions.	Deaths.	Daily sick.
1870	Dera Ghazi Khan, Jany. 1869, from Kohat.	158·3	1·1	4·8
1871	Ditto ditto ...	133·3	2·6	5·4
1872	Dera Ismail Khan, Feb. 1872.	174·	1·6	3·4
1873	Ditto ditto ...	151·5	1·6	6·5
1874	Ditto ditto ...	159·8	1·6	5·4
	Average ...	155·38	1·70	5·10
1875	Edwardesabad, 3rd Feb.	151·26	1·8	5·16

II. Location and movements.—The head-quarters of the regiment was at Dera Ismail Khan from the 1st January till the 29th; the regiment then marched in course of relief for Edwardesabad, arriving at that station on the 3rd of February. The head-quarters was not removed from Edwardesabad during the remainder of the year. Detachments were furnished by the regiment while at Dera Ismail Khan to the frontier outposts mentioned in the annual report of last year. While at Edwardes-

Digitized by Google

abad the regiment garrisoned the outposts of Jani Khyl, Latammar, and Kurram. During the tour of His Honor the Lieutenant-Governor, an escort—strength 201—was supplied. A detachment was supplied to Sheik Budin for 71 days.

As the lines occupied by this regiment have been previously described, no special remarks regarding them are now called for. The drainage is stated to be sufficient, except after a sudden and excessive rainfall. The conservancy of the lines and their general cleanliness has been unusually good throughout the year. The water-supply and diet have been of good quality; vegetables were abundant. As each man had an average of nearly 6 nights in bed, the duty cannot be considered to have been excessive. Lines, &c. Water-supply.

XIII. Marches and service.—The regiment marched from Dera Ismail Khan to Edwardesabad, and 201 men escorted His Honor the Lieutenant-Governor during his tour in the district. Marches and service.

XIV. Hospital.—In my report for last year I called attention to the bad condition of the hospital, more particularly with regard to the out-houses. During the year a special report was forwarded to the Brigadier-General on this subject. I believe a plan has been sanctioned for some years, which does away, to a great extent, with the defects complained of; but up to the present time nothing has been done to remedy them. I have no doubt that, with these conditions, recoveries are retarded and some cases rendered more dangerous—the natural result of bad ventilation and an impure atmosphere. Hospital.

XV. Sickness, mortality, and invaliding.—Strength of the regiment— Sickness, mortality, and invaliding.

Present	616·82
Absent	131·93
TOTAL	748·75

STATION.	PERIOD.		Strength.	TOTAL NUMBER OF		Daily average number of sick.	PER CENT. OF STRENGTH PER ANNUM.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Dera Ismail Khan, &c.	1st Jany. ...	31st Dec. ...	566·29	913	12	28·52	161·2	2·1	5·03
Detachment at Zam.	Ditto ...	7th Feb. ...	32·28	3	1	·83	89·23	29·4	2·5
Detachment at Jatta.	Ditto ...	Ditto ...	64·28	1	...	·25	14·98	...	·4
Escort Lieutenant-Governor.	12th Jany.	23rd Jany.	201	9	1	1·25	134·58	14·19	·62
Detachment at Sheik Budin.	1st July ...	19th Aug.	71	1	...	·25	10·3	...	·35
Detachment at Jani Khyl.	6th Nov. ...	...	35	6	...	·75	35·3	...	2·1
TOTAL ...	...	...	616·82	933	14	31·85	151·26	2·27	5·16

Number of deaths in hospital 14; out of hospital, none; total 14; per cent. of total strength ... 1·8
„ invalided ... ... 15; „ „ ... 2·
„ sent on sick leave ... ... 6; „ „ ... ·8
„ of days spent in hospital 10,555; per admission 11·3; per man of total strength ... 14·1
„ „ on sick leave 1,518; per man 2·53; „ „ ... 2
Total temporary loss of service per man of total strength ... ... 16·1

XVI. Principal causes of sickness.—As a cause of sickness malaria stands first; of quotidian ague there were 524 admissions, of tertian ague 44, dysentery 49 cases, chronic rheumatism 18, diarrhœa 21, colic 21, abscess 20 and blister of feet 18. Principal causes of sickness.

XVII. Principal causes of mortality.—The deaths for the year amounted to 14 men; of these, 9 were due to pneumonia, 1 to ague, 1 to bronchitis, 1 to chronic rheumatism, 1 to valvular disease of the heart, and 1 to dyspepsia. Principal causes of mortality.

On the 26th November, Mr. Banister made his inspection. The barracks are in the outer enclosure of the fort proper, spacious enough for Europeans, and excellently ventilated. The portion of the hospital set apart for the sick of this regiment was not only better ventilated and lighted than that allotted to the 3rd Punjab Infantry, but was also less blocked up by surrounding buildings. The hospital arrangements and equipment were satisfactory and complete. Six of the 50 recruits were over aged, and several others but poorly developed. Inspection.

Digitized by Google

No. 3 Punjab Light Field Battery—Dera Ismail Khan.

Medical Officers.

I. Medical Officers.—Surgeon-Major A. P. Holmes, 1st to 29th January; Surgeon E. Sanders, 29th January to 30th April; Surgeon S. M. Brereton, 1st May to 18th June; Surgeon O. Duke, 19th June to 31st July; Surgeon J. Duke, 1st August to 26th November; Surgeon-Major H. Cookson, 26th November to 31st December. The lastnamed officer has submitted the report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Dera Ismail Khan, January 1869.	182·5	2·8	6·
1871 ...	Ditto ...	119·8	...	3·4
1872 ...	Edwardesabad, Jan. 1872	318·1	...	6·3
1873 ...	Ditto ...	312·1	·3	5·5
1874 ...	Ditto ...	299·5	2·8	6·
	Average	246·4	1·18	5·44
1875 ...	Dera Ismail Khan, January 1875.	264 58	2·82	7·01

Location and movements.

II. Location and movements.—At Edwardesabad, until 24th January, on which date the battery marched for Dera Ismail Khan, where it arrived on the 29th, occupying six days on the march. No events occurred on the march.

Topography.

III. *Topography*—Has been frequently described. The river threatens to invade the cantonment; protective works are in hand. The climate is very hot in summer and very cold, damp and cloudy in winter.

There is nothing in the situation or sanitary condition of the lines which calls for any special remark. The drainage is described as being indifferent in consequence of the dead level of the ground on which the lines are built. The duty has not been excessive; each man had 4·25 nights in bed.

Hospital.

XIV. Hospital.—Hospital accommodation is bad; a special report upon this subject has been submitted.

Sickness, mortality, and invaliding.

XV. Sickness, mortality, and invaliding.—Strength of the battery—

Present	81·26
Absent	25·01
Total ...	106·27

Station.	Period.		Strength.	Total Number of		Daily average number of sick.	Per cent. of Strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Edwardesabad and Dera Ismail Khan.	1st January.	31st December	81·26	215	1	5·70	264·58	1·23	7·01

Number of deaths in hospital 1; out of hospital 2; total 3; per cent. of total strength	...	2·82
„ sent on sick leave ... ... 4; „ „	...	3·76
„ of days spent in hospital 2,082; per admission 9·68; per man of total strength	...	19·59
„ „ on sick leave 458; per man 114·5; „ „	...	4·31
Total temporary loss of service per man of total strength	...	23·90

Principal causes of sickness and mortality.

XVI & XVII. Principal causes of sickness and mortality.—Intermittent fevers formed the chief cause of admission; there were several varieties of the disease. The only death was from pneumonia.

Inspection.

At his inspection, made on the 2nd of December, Mr. Banister states that he found the lines of this battery to be scrupulously clean and orderly, but improvements were needed in the drainage, and there ought not to be any difficulty in introducing them, as the river is so close at hand and the ground slopes slightly towards it. The compartment occupied by the sick of this battery in the garrison hospital was not overcrowded; many medicines had run short; but, with this exception, the equipment was complete. All the recruits, 10 in number, were eligible.

Digitized by Google

3rd Regiment Punjab Cavalry—Dera Ismail Khan.

The annual sanitary report of this regiment has been prepared by Surgeon J. Duke, who reports as follows :—

Years.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Rajanpur, January 1868	323·9	2·1	9·9
1871 ...	Ditto ...	277·1	1·	6·1
1872 ...	Dera Ghazi Khan, January 1872	237·8	2	6·7
1873 ...	Ditto	168·8	1·2	4·9
1874 ...	Ditto	250·9	·81	5·8
	Average	251·7	1·42	6·7
1875 ...	Dera Ismail Khan, January 1875 ...	167·33	1·22	3·71

I. Medical Officers.—Surgeon O. T. Duke held charge of the regiment during the year, with the exception of ten days (from 22nd to 31st December 1875), during which period Surgeon J. Duke was in charge. Medical Officers.

II. Location and movements.—The regiment started from Dera Ghazi Khan on 8th January and arrived at Dera Ismail Khan on the 17th idem; from the latter date up to the end of the year, the head-quarters of the regiment has not moved from the latter station; detachments have been posted at Girni and Zam, &c., throughout the year. These detachments are relieved every two months. Location and movements.

IV. Meteorology and climate.—There is nothing particular to note on this head; 10·74 inches of rain have fallen during the year. The average rainfall for the past six years has been 9·39. Meteorology and climate.

V. Lines.—The lines are in excellent order. Lines.

VI. Drainage.—Drainage is in every way unsatisfactory; in the ordinary course of events, owing to the small rainfall, there is no drainage required; but should it rain for more than a few hours, there is no outlet for the water which has fallen. Drainage.

VII. Latrines.—These have been kept thoroughly clean; the filth has been used by the zemindars for cultivation. Latrines.

VIII. Water-supply.—Water-supply is good and abundant. Water-supply.

IX. Diet.—The supply of food has been good and plentiful; as a rule, the sowars feed well and are sufficiently nourished. Diet.

X. Clothing.—The ordinary cavalry uniform is sufficient for the needs of the climate. Clothing.

XI. Duty.—Nights in bed 4 in 7. Duty.

XIV. Hospital.—The sick of the cavalry regiment at this station were formerly treated in the station hospital. A building, quite sufficient for the present needs of the regiment, has been obtained, put in order, and fulfils all the purposes required of it. Hospital.

XV. Sickness, mortality, and invaliding.—Strength of the regiment— Sickness, mortality, and invaliding.

Present	375·29
Absent	116·60
Total ...	491·89

Station.	Period.		Strength.	Total Number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Dera Ghazi Khan ...	1st January	7th January	265·5	526	4	10·99	198·12	1·51	4·14
Marching *en route* ...	8th ditto ...	16th ditto...							
Head-quarters at Dera Ismail Khan...	17th ditto..	31st Dec. ...							
Detachment at Girni, &c....	16th ditto...	31st Dec. ...	22·22	27	...	1·11	126·57	...	5·21
Detachment at Zam, &c. ...	19th ditto...	31st ditto ...	91·38	75	...	1·96	86·33	...	2·25
Total ...	.....	.....	375·29	628		13·91	167·33	1·06	3·71

Number of deaths in hospital 4; out of hospital 2; total 6; per cent. of total strength				...	1·22
„ invalided	8;	„	„	...	1·62
sent on sick leave	10;	„	„	...	2·03
of days spent in hospital 5,077; per admission	808;	per man of total strength		...	10·32
on sick leave 1,207; per man	120·7;	„	„	...	2·45
Total temporary loss of service per man of total strength				... ...	12·77

Digitized by Google

Sickness. *XVI. Principal causes of sickness.*—The health of the regiment has been very good, and the admissions to hospital were principally due to malarious fevers not of a severe type.

Principal causes of mortality. *XVII. Principal causes of mortality.*—Four men died at head-quarters,—two from pneumonia, one from cerebral effusion, and a fourth died suddenly, it was supposed, from disease of the heart; he was in hospital suffering from debility and ague.

Special observations and remarks. *XXI. Special observations and remarks.*—The health of the regiment during the past year has been excellent, and there is no subject requiring discussion from a medical point of view.

Inspection. Mr. Banister reports that on the 2nd of December, the date of his inspection, the lines, which had recently been planted with trees, were much better cared for than at the time of his inspection in 1873, and the imperfect drainage was the only defect he observed in them. Each man had a hut of fair dimensions and opening into a common verandah, and Mr. Banister thinks that this arrangement is more suitable to the habits of natives than the barrack system. Upon the suggestion of Surgeon O. T. Duke, a small house, in the vicinity of the lines, had been fitted up for the sick, and it furnished very fair accommodation for them. The arrangements could not have been more suitable or satisfactory, and nothing was wanting in the equipment.

2nd Regiment Sikh Infantry—Dera Ismail Khan.

Medical Officers. *I. Medical Officers during the year.*—Surgeon E. Sanders, 1st January to 29th April Surgeon S. M. Brereton, 30th April to 11th June; Surgeon O. Duke, 12th June to 27th August; Surgeon J. Duke, 28th August to 15th October; Surgeon E. Sanders, 16th October to 16th November; Surgeon J. Duke, 17th November to 25th November; Surgeon-Major H. Cookson, 26th November to 31st December.

The lastnamed officer has compiled the annual sanitary report.

Year.	Station.	Per cent of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Edwardesabad, Jan. 1869	216·8	1·2	4·1
1871 ...	Ditto ditto ...	112·6	1·9	3·6
1872 ...	Kohat, December 1871	250·9	4·2	6·8
1873 ...	Ditto ditto ...	174·7	2·	3·9
1874 ...	Ditto ditto ...	187·8	1·6	4·1
	Average ...	188·53	2·18	4·5
1875 ...	Dera Ismail Khan, Dec. 1874.	159·68	2·84	5·15

Location and movements. *II. Location and movements.*—The regiment was stationed at Dera Ismail Khan, during the year, with detachments at Zam, Mungrota, Girni, Jutta, and Sheikh Budin.

Topography. *III. Topography.*—The topography of Dera Ismail Khan has been repeatedly described by medical officers. There is nothing new to notice under this head, except that, owing to encroachments of the river Indus, any improvements to lines or hospitals are not to be entertained. The river is making slow but steady advance towards the station, and as yet the protective works appear to have influenced but little the rate of erosion.

Climate. *IV. Climate.*—Very hot and dry in summer; very cold at night in winter, with great diurnal range of temperature.

Lines. *V. Lines.*—The lines are very good; there is plenty of room, as from a fourth to a sixth of the regiment is always absent from head-quarters. The addition of verandahs would greatly improve these barracks for coolness in summer; any new works, however, are not likely to be sanctioned in the present attitude of the river Indus. The quarters of the native officers are exceptionally good, and the lines are well shaded by trees, and I have always found them clean and orderly.

Drainage. *VI. Drainage.*—The drainage is imperfect, I understand, and this is said to be due to the nature of the site; as there has been little rain since I arrived at this station, I have no personal knowledge on the subject. The soil, consisting of very fine alluvium, containing a considerable quantity of soda salts, becomes, when wet, a most miry clay, and when dry, bakes as hard as a metalled road.

Conservancy. *VII. Conservancy.*—The men resort to the fields in the neighbourhood. A latrine is, however, to be brought into use from next year for men who may find it inconvenient to resort to the fields at the required distance. A regular system of conservancy fatigue parties is in use and works well, the whole cantonment being singularly free from offensive smells.

Water. *VIII. Water.*—The men have the choice of using either the water of the Indus, which is vapid and needs to stand some time for the deposit of its silt, or that of the wells; this latter water is somewhat brackish, the chief salt being probably sulphate of soda.

Diet. *IX. Diet.*—The supplies I have inspected were all of good quality; rice and firewood are dear. The practice of under-feeding is very prevalent, I believe, throughout the native army. I have, however, been too short a time with this corps to give an opinion on this subject. That

Digitized by Google

many men in the native army are predisposed to sickness from under-feeding, and are longer in recovering from illness on this account, I am well persuaded of; and I take this opportunity of again expressing my opinion, that more latitude should be given to medical officers in ordering nourishing food to sick sepoys.

X. Clothing.—The uniform is very good and very suitable to the service the men are employed on. Clothing.

XI. Duty.—The duty at head-quarters is not excessive. On out-post duty, however, I understand, the men have a great deal of marching and fatigue to undergo. Nights in bed 3·20 in 7. Duty.

XIII. Service.—No active service; no marches during the year. Service.

XIV. Hospital.—The hospital accommodation is bad. The badness of the garrison hospital, where, under one ill-ventilated and dark roof, the sick of three corps are treated, has been a frequent subject of remark by successive medical officers. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment:— Sickness, mortality and invaliding.

Present	... ...	...	614·97
Absent	... ...	...	125·12
	Total ...	...	740·09

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Dera Ismail Khan ...	1st January	31st Dec. ...	501·19	872	13	29·34	173·98	2·59	5·79
Detachment at Zam	Ditto ...	9th April ...	73·77	36	1	1·94	179·3	4·9	2·62
	2nd July ...	8th Oct ...							
	24th Dec. ...	31st Dec. ...							
Ditto at Mungrota	24th Sep. ...	24th ditto ...	42·53	28	...	1·76	261·1	...	4·13
Ditto at Jatta ...	1st January ...	5th March ...	23·17	...	...	...	...	...	...
Ditto at Manji ...	2nd April ...	4th June ...	69·82	5	...	·34	40·8	...	·49
Ditto at Girni ...	8th October ...	31st Dec. ...	99·30	34	...	1·82	99·9	..	1·83
Ditto at Sheikh Budin	13th Aug. ...	24th Sep. ...	94·14	7	...	·42	63·1	...	·44
Total ...	.....	.....	614·97	982	14	31·69	159·68	2·27	5·15

Number of deaths in hospital 14; out of hospital 7; total	21;	per cent. of total strength	... 2·84
„ invalided	18;	„ „	... 2·43
„ sent on sick leave	16;	„ „	... 2·16
of days spent in hospital 11,568;	per admission, 11·7;	per man of total strength	... 15·63
„ „ on sick leave 2,033;	per man 127;	„ „	... 2·75
Total temporary loss of service per man of total strength			... 18·38

XVI. Principal causes of sickness.—Intermittent fevers and their sequelæ caused by far the greater part of the sickness. A good many of the men are disabled from sores known as frontier sores, and which are very like to, if not identical with, the sore known in Delhi as the Aurungzebi, and which variety of sore is to be found more or less in all those parts of the Punjab where the water-supply is alike saline and contaminated with drainage from towns and villages. These sores are difficult to heal, and I believe local treatment, beyond protection from injury, to be useless; liberal diet, and the internal use of quinine, with opium, I have found the most successful treatment. The application of strong caustics to these sores is both useless and barbarous. As in other parts of the Punjab where the diurnal variations are great, in the more severe winters, pleurisy and pneumonia have been prevalent. The former disease is very fatal to all classes of natives, and I have made many *post-mortem* examinations in cases where death was so sudden as to lead to judicial inquiry, and have found the lungs glued to the parietes so as to have little, if any play, and in many cases pericardial effusion. When the pneumonia is not double nor complicated with extensive pleurisy, death is, I believe, rare as an immediate result of the disease. The cause of pneumonia and pleurisy I believe to be exposure to cold. It has always been a matter of surprise to me how natives, poorly fed and often indifferently clad, resist exposure to cold in open barracks and flimsy tents, in which Europeans would be most miserable. There is not a tittle of evidence to show that pneumonia is of a communicable nature (of course, I do not allude to pneumonia as a leading feature in typhus fevers); were it so, surely some one of the many European medical officers would ere now have been attacked, even as such officers are attacked by the typhus fevers prevalent from time to time in our jails. Principal causes of sickness. Pleurisy and Pneumonia.

The outpost duty is a fertile source of disease in this station, and when a detachment comes in, there is always a long array of cases of enlargement of the spleen and frontier sore to be treated. The water-supply at some of the outposts, I understand, is most abominable.

Digitized by Google

Principal causes of mortality.

XVII. *Principal causes of mortality.*—The deaths were caused as follows:—

	In hospital.	Out of hospital.
Drowning	...	2
Ague, *a* (Aneurism)	1	...
Phthisis	2	...
Sunstroke	1	...
Bronchitis (*a*)	1	...
Pneumonia	2	...
Pleurisy	3	...
Enteritis	1	...
Dysentery	2	...
Ague cake	1	...
Unknown	...	5
Total	14	7

The case of ague died suddenly of aneurism of the aorta, which burst into the pericardium. Of the men who died out of hospital, two are supposed to be drowned in the Indus. The causes of the deaths of the others are stated to have been as above.

Inspection.

Mr. Banister made his inspection of this regiment on the 2nd December, after an unusually heavy rainfall which displayed the inefficient state of drainage, not only in the lines of the regiment, but in all other parts of the station. The barracks were found in good order and were never fully occupied, owing to the number of men on duty at the outposts. The compartment allotted to the sick of this regiment in the garrison hospital was unduly crowded, although there were only 30 on the sick list, and the defects in warming, lighting, and ventilation were duly reported. The recruits, 33 in number, were considered to be "tolerably good, but certainly not 1st class."

2nd Regiment, Punjab Infantry—Dera Ismail Khan.

Medical Officer.

I. Medical Officer.—Surgeon James Duke, who held medical charge of the regiment throughout the year (with the exception of three months, when absent on privilege leave), reports as follows:—

Location and movements.

Years.	Stations.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Kohat, November 1868, from Abbottabad	223·5	2·2	6·
1871 ...	Ditto ditto ...	198·6	2·3	6·6
1872 ...	Dera Ghazi Khan, January 1872 ..	175·8	2·	6·1
1873 ...	Ditto ditto ...	173·3	1·9	5·1
1874 ...	Ditto ditto ...	194·1	1·2	4·8
	Average	193·06	1·92	5·72
1875 ...	Dera Ismail Khan, January 1875... ...	131·17	2·46	4·29

II. Location and movements.—The regiment was stationed at Dera Ghazi Khan during the first two weeks of the year, but marched, in accordance with the triennial relief, from that station on 17th January 1875, arrived at Dera Ismail Khan on 27th January, and furnished the following detachments:—

Rajanpur ...	1st January	to	22nd January 1875
Bundowalla ...	ditto	„	5th February „
Hurrund and Digri...	ditto	„	15th January „
Mungro ta ...	ditto	„	22nd ditto „
	ditto	„	24th December „
	ditto	„	31st December „
Zam and Kirgi ...	2nd July	„	31st December „
Girni, Manji, Draband ...	29th January	„	16th April „
Tank and Girni ...	5th February	„	5th March „
Sheikh Budin ...	24th September	„	5th November „
Tank, Girni, Manji, Draband, and Jatta ...	9th July	„	31st December „

Topography and physical geography.

III. Topography and physical geography.—This subject has been entered into in previous reports. During the past year, however, the ever-changing Indus has seriously threatened to destroy the station. With the commencement of the rains the river rose rapidly, flooded the surrounding country, and soon approached within half a mile of cantonments. As the water subsided in September, it became evident that the course of the river had changed. The banks were rapidly cut away, often as many as nine yards falling in during the 24 hours. The great efforts made to check the advance of the water have been partially successful, but the banks are still slowly being cut away and the stream flows swiftly within 200 yards of cantonments. This near approach of the water has excited no ill effect on the troops.

Meteorology and climate.

IV. Meteorology and climate.—The cold during the latter half of the month of January was very great. Ice was met with on the road-side, and during the march from Dera Ghazi

Digitized by Google

Khan water was often frozen to the thickness of half an inch in a *chelumchee*. On the night of the 29th September a violent hurricane swept over the district, blowing down several large trees and injuring more or less all the timber in the station.

V. Lines, barracks, and huts.—The barracks are kutcha and divided into sections placed parallel to one another. They are in good order and afford sufficient accommodation, but the floors are not raised sufficiently above the ground. Good verandahs and chicks to the doorways are much needed in the hot weather. Lines, barracks, and huts.

VI. Drainage.—The drainage is as good as the nature of the soil permits of. Drainage.

VII. Conservancy and latrines.—The sepoys in the lines resort to the jungle for the purposes of nature. It is considered undesirable to build a latrine at present owing to the threatening proximity of the river Indus. The hospital conservancy arrangements are good and sufficient. Conservancy and latrines.

VIII. Water-supply.—The water-supply in the lines is derived from a pucca well, and the water is of very good quality. Water-supply.

IX. Diet.—Food supplies have been good and abundant. Diet.

X. Clothing.—The khaki drill is very suitable to the climate and dusty character of the soil. The regulation boot is worn on parade. Clothing.

XI. Duty and employment.—Duty has not been heavy; the average number of nights in bed at head-quarters was 6·10. Duty and employment.

XII. Exercise.—The recruits are regularly put through gymnastic exercises by non-commissioned officers, and sports are held annually and generally encouraged. Exercise.

XIII. Marches.—The regiment marched from Dera Ghazi Khan on 17th January and arrived at Dera Ismail Khan on 27th January 1875. The cold was very great and the water at many encampings excessively bad, being loaded with sulphates and impregnated with sulphuretted hydrogen; but no diarrhœa followed its use amongst the men. To the British officers it was very unpalatable, and even tea made with it could not be drunk. The dust on the road was very thick and rose in clouds as the regiment marched along, producing so much irritation, that some of the men attributed to this fact the after-occurrence of pneumonia, which disease had attacked nine men on the day of arrival at Dera Ismail Khan. Marches.

XIV. Hospitals.— The hospital has been commented upon unfavorably by previous medical officers. The accommodation afforded this year to the 2nd Punjab Infantry was greater than that afforded to the former regiment, owing to the vacant space caused by the removal of the sick of the 3rd Punjab Cavalry to a separate building. During the month of March, owing to the occurrence of several cases of pneumonia in this building, the sick were removed to a vacant barrack in the lines to allow of the building being cleansed and rendered pure. This hospital is very badly lighted, and any case requiring special attention has to be carried into the verandah for inspection. From its large size, it is bitterly cold in the winter. The distance from the lines is also considerable, and more sick attendants are required on this account than would be otherwise necessary. Hospitals.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	605·34
Absent	...	...	...	...	125·76
			Total	...	731·10

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters, Dera Ghazi Khan ...	26th January	1st January ...	459·53	86	...	4·52	231·6	...	·96
Ditto Dera Ismail Khan Detachment Rajanpur ...	27th ditto ...	31st December	465·35	652	10	25·26	150·8	2·30	5·42
Ditto Bundowalla ...	1st ditto ...	22nd January	83·78	...	...	1·28	...	...	1·52
Ditto Mungrota ...	1st ditto ...	5th February	25·	...	...	.....	...	...	...
Ditto Ditto ...	1st ditto ...	22nd January	41·	...	...	·20	...	...	·48
Ditto Hurrund and Digri	24th December	31st December	41·	2	...	3·05	222·6	...	7·43
Ditto Manji, Girni, and Draband ...	1st January ...	15th January	54·12	1	...	·56	44·7	...	1·02
Ditto Tank and Girni ...	29th ditto ...	16th April ...	42·66	...	...	1·11	...	...	2·60
Ditto Sheikh Budin ...	5th February	5th March ...	64·	...	...	.....	...	...	...
Ditto Zam and Kirgi ...	24th September	5th November	81·42	5	...	1·92	52·1	...	2·35
Ditto Tank, Girni, Manji, Jatta, and Draband ...	2nd July ...	31st December	69·94	89	...	1·38	111·1	...	1·97
	9th ditto ...	ditto ...	99·65	11	...	·34	22·8	...	·34
Total ...	.....	.....	605·84	796	10	26·01	131·1	1·65	4·29

Number of deaths in hospital 10; out of hospital 8; total	18;	per cent. of total strength	...	2·46
„ invalided	18;	„ „	...	2·46
„ sent on sick leave	19;	„ „	...	2·59
„ of days spent in hospital 9,494; per admission	11·9;	per man of total strength	...	12·99
„ „ on sick leave 2,820; per man ...	148·42;	„ „	...	3·85
		Total temporary loss of service per man of total strength	...	16·84

Digitized by Google

Principal causes of sickness

XVI. Principal causes of sickness.—

	Station.	Admission.
1873	Dera Ghazi Khan ...	1,073
1874	Ditto ...	1,164
1875	Dera Ismail Khan ...	797

The admissions during the present year have fallen far below the two previous years. The large number of admissions during the year 1874 at Dera Ghazi Khan was caused by the great prevalence of fevers, which attacked equally and severely the civil population and the sepoys, and which was supposed to be the result of the great inundation of the surrounding country by the overflow of the Indus. The recruits especially suffered. The following table shows the relative number of admissions from all the varieties of fever for the year 1874-75 :—

1874.		Diseases.	Admissions.	1875.		Diseases.	Admissions.
...	Dera Ghazi Khan.	Ague (a)	747	..	Dera Ismail Khan.	Ague (a)	280
...		„ (b)	44	...		„ (b)	12
...		„ (c)	3	...		„ (c)	15
...		Remittent fever ...	6	...		Remittent fever ...	7
...		Simple continued fever ...	12	...		Simple continued fever ...	5
...		Total ...	812	...		Total ...	319

Severe head symptoms were often associated with the more violent forms of fever. In one case, which has been returned under the head of remittent fever, complete suppression of urine for some hours, with rice-water stools and slight cramps, was associated with great heat of skin and restlessness. On the 10th of May, a sepoy who was under treatment in hospital for ague (*a*), was seized with symptoms of cholera and died rapidly. This case is worthy of record, as the occurrence of this disease in the station is hardly known even by the oldest inhabitant. Bronchial affections have greatly increased, and whereas in 1874 only 5 cases of pneumonia were treated, in the year 1875, 35 cases were treated in hospital, the number of admissions reaching the maximum in February, or shortly after the arrival of the regiment at Dera Ismail Khan. Three of these cases originated in hospital, in men who were under treatment for other diseases, and a fourth in an attendant on a bad case suffering from the disease. The disease slowly disappeared with the advent of the hot weather. Frontier sores have been very troublesome to treat, and many sepoys have been detained months in hospital on this account.

Principal causes of mortality.

XVII. Principal causes of mortality.—Ten deaths occurred in hospital as follows :—

Diseases.	Number.
Pneumonia	6
Congestion of spleen	1
Dysentery	1
Tabes mesenterica	1
Cholera	1
Total ...	10

One jemadar and a sepoy were murdered at an outpost, and a sepoy who was wounded at the same time died at his home.

Epidemics. *XVIII. Epidemics.*—None.

Vaccination. *XIX. Vaccination.*—A few children have been vaccinated in the regimental lines. The men have not been vaccinated, as most of the recruits at the time of admission presented either marks of small-pox or inoculation.

Recommendations. *XX. Recommendations.*—The various recommendations that have been made during the year have always received attention.

Special observations and remarks. *XXI. Special observations and remarks.*—The health of the regiment has on the whole been good during the year. The excess in the number of deaths over the mortality of 1874 was probably caused by the violent outbreak of pneumonia, which has this year committed ravages amongst many of the regiments composing the Punjab Frontier Force. The health of the men on duty at the outposts has been much better this year. The admissions from all causes were only 58, as compared with the total 232 of 1874. The number of men sent on sick leave has also increased. Of the total number, however, 8 were men who had been sent up before the Annual Invaliding Committee, but who were returned for further treatment and sick leave. All these cases were re-admitted into hospital on their return from sick leave, and with several others have helped to fill up the superficial space in hospital and to swell the daily average sick.

Inspection. On the occasion of his inspection on the 2nd December, Mr. Banister found that the barracks were in good order and afforded ample space for the

Digitized by Google

men, but, like those of the other infantry regiments, were unprotected with doors and verandahs. The sick occupied two compartments in the garrison hospital, and were too crowded; but the arrangements in all other respects appeared as satisfactory as the circumstances permitted. The hospital equipment was in serviceable order. Of the 48 recruits, the Deputy Surgeon-General considered 5 of them to be decidedly ineligible from age and infirm physique.

4th Regiment, Punjab Cavalry—Dera Ghazi Khan.

I. Medical Officer.—Surgeon A. Macgregor has been in medical charge throughout the year and reports as follows:— Medical Officer.

Year.	Station.	Per cent. of strength.		
		Admission.	Deaths.	Daily sick.
1870 ...	Kohat, March 1869, from Edwardesabad.	175·5	1	5·8
1871 ...	Ditto ditto ...	149·2	2·4	6·3
1872 ...	Rajanpur, Dec. 1871 ...	165·5	1·5	7·2
1873 ...	Ditto ditto ...	112·5	1·5	4·6
1874 ...	Ditto ditto ...	174·2	1·3	8·5
...	Average	155·38	1·54	6·48
1875 ...	Dera Ghazi Khan, Jan. 1875.	161·65	1·98	6·22

II. Location and movements.— The regiment marched from Rajanpur on 1st January 1875, and arrived at Dera Ghazi Khan, in relief of the 3rd Punjab Cavalry, on the 6th of that month. The following detachments were maintained during the year:— Location and movements.

Hurrund, average strength		23·25
Mungrota	... ...	17·73
Veddone	... ...	12

The detachments at Hurrund and Mungrota were relieved, respectively, every two months; that at Veddone, only a few miles from head-quaters, weekly.

Meteorology.—Owing to the want of instruments there were no meteorological observations recorded; but it is stated that the cold was very severe in January and February, while the heat was intense in the latter part of June. Meteorology. The lines are described as having been in good repair, clean and well ventilated; there was no over-crowding, as each man had from 1,000 to 1,200 cubic feet of air. Lines. Trees are now growing in the centre of the lines. There is only surface drainage, and but little of that. Committees have reported on the drainage, and the question is now under the consideration of Government; however, as the rainfall is a small one, it would appear that no very extensive scale of drainage is required. Drainage. There is a latrine about 300 yards from the lines; the ashes of the horse-litter and the night-soil were buried together. Latrine. The general conservancy of the lines was carefully attended to. The water-supply is said to be abundant and of fair quality. Water-supply. Pucka chabutras, drains and small tanks were constructed round the wells, so that all refuse water was carried away. The horses are watered in the lines by bhistees. No cases of underfeeding had come under observation. Vegetables were abundant and cheap, and largely used by the men; supplies of all kind were of good quality and abundant. The uniform is described as being sufficient and suitable. Clothing. Owing to the severity of the cold weather, special care was taken to ensure a sufficiency of warm under-clothing. Duty. The duty was in no way severe, as each man had upwards of five nights in bed. The regiment marched from Rajanpur to Dera Ghazi Khan on 1st of January, arriving there on the 6th. No event worthy of report had occurred on this march. Owing to the cold and the seeming tendency to chest complaints, the marches were commenced at 8 o'clock A. M. Hospital. The hospital is described as a very fair building, raised some three feet above the ground; was well ventilated, and afforded ample accommodation for the sick of the regiment. The building had been repaired, the charpoys renewed, and chicks had been provided for the doors and verandahs. A small hospital for the treatment of infectious diseases had also been built, in which ten patients could be placed with 630 cubic feet of air per man.

IV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	338·99
Absent	165·01
Tota	504

Digitized by Google

Station.	Period.		Strength.	Total Number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Dera Ghazi Khan ...	6th January ...	31st Dec. ...	301	536	8	19·96	178·07	2·65	6·63
Hurrund ...	1st „ ...	Ditto ...	21·59	12	...	1·13	55·58	...	5·23
Total ...	.....	.....	338·99	548	8	21·09	161·65	2·36	6·22

Number of deaths in hospital 8; out of hospital 2; total			10;	per cent. of total strength	...	1·98
„ invalided			3;	„ „	...	·59
„ sent on sick leave			21;	„ „	...	4·16
„ of days spent in hospital 7,697·85, per admission			13·68;	per man of total strength	...	15·27
„ „ on sick leave 2,420, per man		...	115·23;	„ „	...	4·80
Total temporary loss of service per man of total strength ...				...	...	20·07

Principal causes of sickness.

Principal causes of sickness.—There was a considerable decrease in the number of fever cases; the medical officer considers that this was owing to the year being an exceptionally wet one. Pneumonia showed a slight increase, but as 45 per cent. of those attacked by it died, it may be fairly considered as of a more severe type than that met with in 1874. Mr. Macgregor states that he has not yet determined its causation, though he thinks that "it is generally conceded to be contagious."

Principal causes of mortality.

XVII. Principal causes of mortality.—Pneumonia 7 deaths, remittent fever 1. The deaths from pneumonia all happened in the first three months; from then till December no death took place. In addition, two men died at their homes from accidents—one was killed by a tiger, the other fell from his horse and died in consequence.

Epidemics.

XVIII. Epidemics.—The regiment suffered in common with others of the Punjab Frontier Force, during January and February, from pneumonia, which might fairly be called epidemic. With regard to its etiology I am most undecided. Regiments seemed to be suffering from an inflammatory epidemic influence. It is noticeable that north-east winds were prevalent and the weather very severe; with regard to cold and its influence I am in doubt, because it is difficult to tell whether the cold, which is supposed to have produced the disease, is any more severe than what has been before borne without effect. At first I was inclined to think that Hindoos were more liable, owing to their practice of stripping to cook and eat, but I found that both races were equally attacked and liable to die. A great drawback to the better pathology of the disease was the difficulty of obtaining *post-mortems*, the men objecting so much, that I was afraid, if enforced, they would come to have such a horror of hospitals as to prefer to wait in the lines till too late. I was more fortunate in having medical charge of the jail, in which a few cases occurred so almost identical in symptoms with the regimental ones, that the *post-mortems* I made might be taken as some sort of guide. A peculiarity of some fatal cases was the sudden relapse, collapse, and rapid death. I have had cases which, having passed through the disease and become convalescent, with normal temperature, good appetite, and only weak, were suddenly seized with severe pain and dyspnœa, rapid rise in temperature up to 100, followed by death in a few hours, without any apparent exciting cause. I was enabled to make one *post-mortem* in the case of a prisoner who died in this way. Here I found grey hepatization of left lung and right lung solid, except at apex. In the heart the right auricle was quite filled with a large clot decolorized, and in the aorta was a large decolorized clot. I lost 45 per cent. of those attacked, and the men dreaded the disease as much as cholera.

Vaccination.

XIV. Vaccination.—All the children in lines have been successfully vaccinated, and vaccination has been offered to men who wish it. Most of the men bear the marks of small-pox. The regiment is fairly protected.

Inspection.

On the 14th December, the date of his inspection, Mr. Banister reports that he found the lines in very good order, and as in the 3rd Regiment, Punjab Cavalry, every sowar had a separate compartnent opening into a common verandah. The hospital was rather too much crowded, with 24 patients and 8 attendants, but in other respects the management was creditable and satisfactory. A well-raised detached building, with two good-sized wards, surrounded by a verandah, had lately been added to the accommodation, and was intended for the reception of infectious and other special diseases.

Mr. Banister reports that the 33 recruits were of only moderate physique.

Digitized by Google

1st Regiment, Punjab Infantry—Dera Ghazi Khan.

I. Medical Officers.—Surgeon Bookey was in medical charge from 1st January to 16th February; Surgeon-Major Costello from 16th February to 13th April; Surgeon Davis from 13th April to 16th July; Surgeon Macgregor from 16th July to 13th August; Surgeon Davis from 13th August to 17th September; Surgeon B. Gupta from 17th September to 5th November; and Surgeon J. Kelly from 5th November to end of year. The last-named officer has furnished the report. Medical Officers.

Year.	Station.	Per cent. of strength.		
		Admissions.	Deaths.	Daily sick.
1870	Kohat, Dec. 1868 ...	230·1	2·2	5·5
1871	Ditto ...	181·8	1·2	4·7
1872	Edwardesabad, December 1871 ...	203·1	2	4·5
1873	Ditto ...	181·4	3·1	5
1874	Ditto ...	167·6	1·2	4·9
	Average	192·8	1·94	4·92
1875	Dera Ghazi Khan, January 1875 ...	204·38	5·24	4·93

II. Location and movements.—The regiment marched from Edwardesabad (Bunnoo) in course of relief on 1st January, and arrived at Dera Ghazi Khan on the 16th. The head-quarters moved from Dera Ghazi Khan on 11th October *en route* for the camp of exercise, Delhi; reached Naryna, near Delhi, on 8th December, and encamped there till the end of the year. Detachments were quartered at Bunnoo, Mungrota, Hurrund and Digri, Rajanpur, Blaundowal and Dera Ghazi Khan. Location and movements.

Surgeon Kelly had been in charge of the regiment for so short a time previous to the end of the year, that his report regarding the lines, diet, clothing, water-supply, conservancy, &c., contains but little information under these respective headings. The duties were not excessive; nights in bed 5·49. The march to Delhi agreed with the men, and it is considered probable that they were healthier than if they had stayed in cantonments. The hospital was the same as that occupied by the 5th Punjab Infantry in 1874. The houses for hospital assistants and hospital establishment were defective, but as yet no alteration has been made. Lines, &c.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	613·55
Absent	...	...	...	...	110·92
			Total	...	724·47

Station.	Period.		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average of sick.
Head-quarters on march from Edwardesabad and at Dera Ghazi Khan.	1st Jan. ...	10th Oct. ...	477·21	741	29	21	200·27	7·83	4·40
Head-quarters on march from Dera Ghazi Khan and at Delhi.	11th Oct. ...	31st Dec. ...	504·5	278	2	22·25	245·25	1·76	4·41
Detachment at Edwardesabad.	1st Jan. ...	15th Jan. ...	29·66	...	2	10·07	...	165·28	14·45
Detachment at Mungrota ...	13th „ ...	31st March ...	42	1	...	·09	11·17	...	·21
„ at Hurrund and Digri.	20th „ ...	31st „ ...	55·93	10	...	·82	91·99	...	1·46
„ at Rajunpur ...	1st April ...	30th Sept. ...	103·91	41	...	2·33	78·67	...	2·24
„ at Blaundowal	10th „ ...	24th „ ...	25	15	...	·50	130·40	...	2
„ at Dera Ghazi Khan.	11th Oct. ...	31st Dec. ...	211·41	168	2	21·70	353·75	4·21	10·26
Total ...	...	...	613·55	12·54	35	30·30	204·38	5·70	4·93

Number of deaths in hospital 35; out of hospital 3; total 38; per cent. of total strength			... 5·24
„ invalided	25;	„	... 3·45
„ sent on sick leave	23;	„	... 3·17
„ of days spent in hospital 11,056; per admission 8·81; per man of total strength			... 15·26
„ „ on sick leave 2,580; per man ... 110;		„	... 3·49
Total temporary loss of service per man of total strength			... 18·75

Digitized by Google

Sickness. *XVI. Sickness.*—There were 1,254 admissions during the year. The chief causes of sickness were intermittent fevers, for which there were 711 admissions. Remittent fever caused 33 admissions, pneumonia 57, and bronchitis 34; dysentery 51; diarrhœa 22; abscesses, ulcers and boils 75; general debility 19. It is often difficult to decide whether inflammation of the lung is the primary disease or secondary result of an essential fever; almost every case of remittent fever is complicated with bronchitis, and many exhibit the more dangerous complication of pneumonia.

Mortality. *XVII. Mortality.*—There were 38 deaths during the year; of these, 35 occurred in hospital and 3 out of hospital. Pneumonia was the most fatal disease; it caused 30 of the deaths; and 1 death was caused by pneumonia complicating remittent fever; 5 deaths were due to remittent fever and 1 to phthisis. Of the 38 deaths, 29 occurred in January and February. It is noteworthy that the regiment marched from Edwardesabad on 1st January; and it is probable that the excessive sickness that occurred during the march of 15 days, and afterwards at Dehra Ghazi Khan, was due to the influence of the climate of Edwardesabad.

Inspection. On the 14th December, the date of his inspection, Mr. Banister reports that the barracks were undergoing very great improvements; the hospital arrangements were satisfactory. This regiment had suffered more severely from pneumonia than any other in the Frontier Force. No less than 49 cases of this disease had occurred in the first two months of the year, that is, during and immediately after the march from Edwardesabad; in October, the regiment moved to the camp of exercise at Delhi, and the change from the Frontier proved of the greatest advantage.

4th Sikh Infantry—Dera Ghazi Khan.

Medical Officers. *I. Medical Officers.*—Surgeon G. McBride Davis held charge of the regiment throughout the year, and furnishes the report.

Location and movements. *II. Location and movements.*—The regiment was from the 1st to the 3rd of January on the march from Kohat to Dehra Ghazi Khan, and from the 4th January to end of year at Dehra Ghazi Khan.

Detachments. Detachments were furnished as follows:—At Rajanpur, from 9th January to 6th April, and again from 27th September to the end of the year; at Bundowalla, from 9th January to 18th April, and again from 22nd September to 31st December; at Hurrund and Digri, from the 9th to 26th of January, and again from 27th March to the end of the year; at Mungrota, from 25th March to 1st October; and with the Deputy Commissioner, Dehra Ghazi Khan, in the Bilooch hills, from 20th November to 31st December.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870	Edwardesabed, February 1869.	256·8	3·8	5·9
1871	Ditto ...	212	3·1	6·7
1872	Kohat, February 1872.	203·1	4·4	5·4
1873	Ditto ...	181·4	2·3	3·9
1874	Ditto ...	173·5	1·4	3·8
	Average ...	205·36	3	5·14
1875	Dera Ghazi Khan, Jany. 1875.	149·76	2·70	3·75

Topography. *III. Topography.*—A description of the topography of Dehra Ghazi Khan has not been repeated, as it has been given in former reports.

Lines. *V. Lines.*—The regiment on arrival at Dehra Ghazi Khan took over the 2nd Punjab Infantry lines, which have been described in previous reports. The huts are in process of being re-roofed and heightened some 2 feet. The men have good accommodation, each man of total strength having a superficial area of 35 square feet and 444 cubic feet of breathing space, and of average strength present 53 superficial and 666 cubic feet. The huts are fairly ventilated; no overcrowding took place during the year.

Drainage. *VI. Drainage*—Is by surface drains, which are usually sufficient; but after heavy rain (which seldom occurs here) water lodges in a great many places. From the whole surrounding country being nearly level, great difficulties exist in the way of efficient drainage.

Conservancy, and latrines. *VII. Conservancy and latrines.*—No latrines exist except hospital ones. The men resort for purposes of nature to ground north of cantonments, some 800 yards distant from the lines. This system appears to work very well in a dry climate like Ghazi with little rainfall.

Water-supply. *VIII. Water-supply.*—From two wells in the lines; is plentiful, and appears to be of good quality; a third well exists near the hospital, but as the water is brackish, it is only used for washing purposes, the men not being allowed to wash at the other two wells. A large tank, which is filled from the inundated canals, affords a good swimming bath to the men in the hot weather.

Digitized by Google

IX. Diet.—Quality of food good; the men feed fairly and are well nourished. The practice of under-feeding is rare. Vegetables are plentiful. Diet.

X. Clothing.—As described in previous reports, is suitable to climate, season and duty. Clothing.

XI. Duty and employment.—Consists of the ordinary routine of parades and guards. Night duties were not heavy, 5·92 in 7 being the average number of nights in bed during the year. Duty and employment.

XII. Exercise and amusements.—Gymnastics, foot-ball, cricket, and a little shooting near Dehra Ghazi Khan. Exercise and amusements.

XIII. Marches, &c.—January 1st found the regiment halted at Towsa, some three marches (45 miles) from Dehra Ghazi Khan; arrived at the latter place on the 4th January. This was the only march of the year. There is a good deal of marching of detachments to occupy and relieve the numerous outposts in the district. Marches, &c.

XIV. Hospital.—The hospital has been described in the annual report of 1873, page 220; it is a good building and affords accommodation for 50 beds. Fires were kept burning during the cold weather; each man brings his own bedding to hospital, and this is supplemented in the cold season by "numdahs" that have been provided regimentally. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	620·98
Absent	...	...	...	118·98
Total		...	...	739·96

Station.	Period. From	Period. To	Strength.	Total numbers of Admissions.	Total numbers of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters on the march from Kohat to Dehra Ghazi Khan.	1st Jan.	3rd Jan.	687.66	14	2	33	247·79	35·4	4·79
Head-quarters at Dehra Ghazi Khan.	4th „	31st Dec.	476·77	752	8	19·67	159	1·69	4·12
Detachment at Hurrund and Digri.	9th „	26th Jan	59	6	...	1·26	206·9	...	2·13
Detachment at Rajanpur ...	9th „	6th April	102·80	26	1	2·17	98·33	3·78	2·11
„ „ Bundowalla ...	9th „	18th „	25·60	3	...	·18	42·79	...	·70
„ „ Mungrota ...	25th March	1st Oct.	42·07	32	...	1·89	145·39	...	4·49
„ „ Hurrund and Drigri.	27th „	31st Dec.	62·65	61	...	1·43	126·92	...	2·28
Detachment at Rajanpur ...	27th Sept.	Ditto ...	70·69	31	...	3·36	166.75	...	4·75
„ „ Bundowalla ...	22nd „	Ditto ...	25	6	...	·38	86·83	...	1·52
Total ...	.....	.....	620·98	931	11	23·33	149·76	1·77	3·75

Number of deaths in hospital 11; out of hospital 9; total 20;	per cent. of total strength	...	2·70
„ invalided 9;	„	...	1·21
„ sent on sick leave 24;	„	...	3·24
„ of days spent in hospital 8,515; per admission 9·14;	per man	...	11·51
„ „ on sick leave 2,251; per man 93·79;	„	...	3·04
Total temporary loss of service per man of total strength		...	14·55

XVI. Principal causes of sickness.—Fevers, chiefly ague (*a*), caused half of the total admissions. Dysentery and diarrhœa caused 45 and 24 admissions respectively, but were less than in previous years. Diseases of the respiratory system (chiefly peneumonia and bronchitis), caused 75 admissions. The other principal causes of sickness were abscess 63, ulcers 25, boils 18, rheumatic affections 38, splenic affections 16. Only three cases of primary and one of secondary syphilis were admitted; no gonorrhœa. Principal causes of sickness.

XVII. Principal causes of mortality.—Eleven deaths took place in hospital during the year, 10 at head-quarters and 1 at Rajanpur. Of these deaths, 2 took place on the march and 8 shortly after the arrival of the regiment, during the months of January and February, and 1 death in December. The deaths in hospital were caused by pneumonia 4, acute and chronic bronchitis 1 each, dysentery 1, splenitis 1, ague 1, hypostatic pneumonia in a case of enteritis 1, and ulcer of the foot—the result of erysipelas—1. Nine deaths took place out of hospital, 3 on sick leave, 1 from anæmia, 1 from diarrhœa, and 1 from splenitis; 3 left behind in other hospitals,—1 for remittent fever, 1 for simple continued fever, and 1 for dysentery; 3 died on furlough, 1 from carbuncle and two not known. Principal causes of mortality.

XVIII. Epidemics.—In the beginning of the year pulmonary inflammatory affections were very prevalent. During the year, 18 cases of pneumonia came under treatment (excluding a fatal case of hypostatic pneumonia in a case of enteritis) with 4 deaths. Of these, 10 cases and 4 deaths occurred between 1st January and 2nd February. Epidemics.

Digitized by Google

Inspection. Mr. Banister reports that on the day of his inspection (the 14th December) he found the barracks undergoing great improvements with reference to space and ventilation, which, on completion, would afford 53 superficial and 666 cubic feet per man; the hospital was in excellent order, but the supply of medicines was considered to be rather inadequate. Among the 66 recruits there were several whom the Deputy Surgeon-General considered to be thoroughly ineligible from inferior development.

1st Regiment, Punjab Cavalry—Rajanpur.

Medical Officers. *I. Medical Officers.*—From 1st January to 20th November, Surgeon G. Thomson, the permanent medical officer, remained in charge. On that date he left the station on special duty. He was relieved by Surgeon A. Macgregor, 4th Punjab Cavalry, who held charge till the 25th, on which date Surgeon E. Sanders, 2nd Sikh Infantry, assumed medical charge, and continued with the regiment till the end of the year. This latter officer has supplied the annual sanitary report.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Edwardesabad, February 1869, from D. I. Khan.	233·4	2·5	6·2
1871 ...	Ditto ditto ...	173·9	1·8	4·6
1872 ...	Kohat, February 1872...	149·7	3·7	3·7
1873 ...	Ditto ditto ...	100·7	2	2·1
1874 ...	Rajanpur, Dec. 1874 ...	122·8	·6	2·6
	Average	156·1	2·12	3·84
1875 ...	Rajanpur	159·69	·83	3·99

Location and movements. *II. Location and movements.*—The head-quarters has been at Rajanpur the whole year. Various detachments have been sent out during the year. One to Bundowalla, 47 strong, relieved every two months; one to Digri, 21 strong, relieved every two months; and one to Mahomedpore, 12 strong, relieved weekly. On the 20th November, 20 men were told off to accompany the Deputy Commissioner, Dera Ghazi Khan, into the Belooch hills. This detachment is still out.

Topography. *Topography.*—A topographical description of the station has been given in previous reports, which it is now unnecessary to repeat. The huts are described as being ample to meet the requirements of the regiment, and had Drainage. been recently repaired and re-roofed. As the station and surrounding country is one uninterrupted level, and intersected in every direction by irrigation Latrines. canals, it is considered that the drainage was very imperfect. There were no latrines for the men, who had consequently to resort to the jungle for Water-supply. necessary purposes. The water-supply was from wells, and this, in the hot weather, was supplemented, to a certain extent, by water from the canal; the water from the wells is stated to have been brackish. No cases of underfeeding were observed; the bazars had been well supplied with all the usual Clothing. articles of diet. The clothing is stated to have been sufficiently warm, and was in every way suitable for the climate and for the nature of the duties the men had to perform. The duty has been light, as each man had an average of six nights in bed during the year. As usual in cavalry regiments, the men exercised and amused themselves with tent-pegging, lime-cutting, &c. The Hospital. hospital is described as being "a very fair building, on the new standard plan—only better, as the men do not face each other, but each bed is behind a pillar." There are no stoves in it, and in consequence, the building, as might be expected, is very cold in the winter. Surgeon Sanders considers that the hospital is well ventilated and affords sufficient accommodation for the sick; it is situated on a good open site; but the drainage of the compound is considered to be defective.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the regiment—

Present	377·6
Absent	100·5
Total	478·1

Digitized by Google

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Rajanpur.	1st January ...	31st December	289·6	567	2	14·12	195·5	69	4·83
Detachment at Bundowalla.	Ditto ...	Ditto ...	47	34	...	·7	72·34	...	1·50
Detachment at Digri	Ditto ...	Ditto ...	21	2	...	·25	9·52	...	.....
Total ...	...	...	377·6	603	2	15·07	159·69	53	3·99

Number of deaths in hospital 2; out of hospital 2; total	4;	per cent. of total strength	...	·83
„ invalided	11;	„ „	...	2·30
„ sent on sick leave	3;	„ „	...	·63
„ of days in hospital 5,500; per admission ...	91;	„ „	...	11·51
„ „ on sick leave 450; per man ...	150;	„ „	...	·93
Total temporary loss of service per man of total strength			...	12·44

XVI. Principal causes of sickness.— Principal causes of sickness.

Intermittent fevers	307
Chest affections	17
Digestive „	60
Injuries	85
All others	134
Total ...	603

XVII. Mortality.—During the year under report, two deaths only have occurred at head-quarters. Of these, one was caused by fibrinous concretions of the heart, the other by pneumonia. Mortality.

XIX. Vaccination.—Fifty-eight recruits were vaccinated; of these 30 were successful. A large number of children and others were also vaccinated, but no account appears to have been kept of them. Small-pox has not occurred during the year, and the regiment is very well protected. Vaccination.

XX. Recommendations.—None worthy of special mention have been made during the year. Every assistance is given to the medical officer, and all recommendations attended to. Recommendations.

XXI. Remarks.—During the year, 48 recruits were examined; of these, 20 were rejected, 6 for defective vision, 3 for poor physique, and 11, by the commanding officer, for other than medical reasons. Remarks.

Mr. Banister made his inspection of this regiment on the 10th December. He reports that the conservancy of the lines had been well attended to, and that the huts were fairly ventilated, in good repair, and free from overcrowding. The hospital had been improved in many ways since his previous visit, and Mr. Banister did not consider it to be so extremely unsuitable as had been represented in some of the periodical sanitary reports. Inspection.

Digitized by Google

EASTERN FRONTIER DISTRICT

(INCLUDING THE STATIONS OF SHILLONG, GAUHATI, DIBRUGARH, CACHAR, JULPAIGURI, AND BAXA.)

Average daily strength present during the year	...	...	... Infantry,	4,249
Average daily sick per cent. of the average strength	...	...	... „	4·83
Ratio of mortality per cent. of the average strength	...	...	... „	2·33

43rd Regiment (Assam) Native Infantry—Shillong.

Surgeon J. O'Brien, M.D., reports as follows:—

YEAR.	STATION.	PER CENT. OF STRENGTH.		
		Admissions.	Deaths.	Daily sick.
1870	Gauhati	160·7	2·9	4·0
1871	Ditto	180·5	1·4	4·4
1872	Ditto	169·6	2·5	5·5
1873	Ditto	178·5	2·9	6·1
1874	Shillong, 3rd January ...	141·5	3·6	6·3
...	Average	166·2	2·5	5·2
1875	Shillong	134·86	1·57	5·31

Medical Officers.

I. Medical Officers.—(*a.*) Surgeon E. G. Russell, Civil Surgeon, Gauhati, held medical charge of the head-quarters of the regiment from 1st January to 10th February, and Surgeon J. O'Brien, M.D., for the remainder of the year. During the absence of the head-quarters from Shillong—*viz.*, from 1st January to 10th February—Surgeon O'Brien held medical charge of the depôt.

(*b.*) The detachment which took part in the Duffla expedition was in medical charge first of Surgeon Bovill, afterwards of Surgeon Wilson.

(*c.*) The party of recruits who were attacked by cholera at Gauhati were treated in the quarantine camp by the Civil Surgeon of that station.

(*d.*) All the other detachments were under the care of hospital assistants.

Location and movements.

II. Location and movements.—(*a.*) The head-quarters were stationed at Gauhati from 1st January to 10th February, as a reserve to the Duffla Field Force. For the rest of the year they were at Shillong. The distance from Shillong to Gauhati is 63 miles, a 4 days' march. During the absence of head-quarters, the depôt of the regiment, strength 204, remained at Shillong.

(*b.*) A detachment of 53 men was stationed for the entire year at Jowai, a large village in the Jaintia Hills. Jowai is about 35 miles by the shortest road to the east of Shillong. This detachment is relieved every 3 months.

(*c.*) The stations and marches of the Duffla detachment, strength 204, will be found in the medical history of the Duffla expedition. No sufficient information on the subject has been received by me. The last men of this body—*viz.*, the 51 who were left behind for some time at Gohpur—rejoined head-quarters on 26th April.

(*d.*) The outposts of Chargola and Allynuggur on the Lushai frontier in the Sylhet district were each garrisoned by 46 men of this regiment from March to December. Up to March the outposts were held by men of the 3rd Native Infantry from Cachar. These outposts are each about 4 days' march from Sylhet, and Sylhet is 5 days' march from Shillong. During the rains most of the country in the Sylhet district is under water, so the outposts have to be reached in boats. These detachments are relieved every 6 months.

(*e.*) The detachment of 70 men who accompanied the Topographical Survey party into the Naga Hills was broken up into small parties, and received medical attendance, some from the civil medical establishment at Samaguting, others from the hospital assistant in charge of the survey party; but no regular returns were received from them. There was, however, very little sickness, as they were all picked men. This detachment rejoined head-quarters in the first week in May.

(*f.*) A detachment of 58 men left head-quarters on 25th December to proceed to Udulgurrie on the Bhootan frontier. The detachment remained there during the Bhutia fair, which began in January and ended about April.

Meteorology and climate.

IV. Meteorology and climate.—The rainfall in Shillong in 1875 was unusually heavy,—heavier, indeed, than that of any year of which we have a record: exactly 100 inches were registered, which is 23 inches above the average of the five preceding years. Rain fell on 162 days, which is also much above the average. There was almost incessant rain in the months of June, July and August. It seldom rained for an entire day; the evenings usually being fine. There were 26 wet days in June, 27 in July, and 30 in August. The temperature was equable throughout the year; the highest recorded being 79° in July,

Digitized by Google

the lowest 42° in December. Owing to the very heavy and long continued rainfall, there were not as many hot days in the summer months as usual. In 1874, a temperature of 86° was registered in May, and 80° was not an uncommon reading in the same month.

The cold weather in the Khasia hills—*viz.*, from October to the end of March—is dry and bracing. Frost lies on the ground almost every morning from the middle of November to the end of February. The thermometer in the grass before sunrise frequently falls as low as 24° Fahr., and shallow water freezes over, but snow never falls there. The most unpleasant feature of the cold weather here is the clouding over of the sky, which takes place nearly every afternoon about 3 o'clock. The clouds last during a portion of the evening; disperse again at 7 or 8 o'clock, leaving the sky perfectly bright and clear. English children thrive remarkably in this climate, but adults do not get on so well. Troublesome diarrhœa, often approaching the nature of dysentery, is a very common complaint amongst the European residents.

Lines, &c. *V. Lines, &c.*—No change of importance was made in any of the lines occupied by the regiment during the year. The huts in Shillong were kept in a state of thorough repair, and many were greatly improved by the addition of small porticos before the doors. The huts at Jowai were in a state of good repair when I visited the outpost in December. The fort itself (*vide* last year's report for a full description of this building) and the hospital were not in an equally satisfactory condition. A report on the subject was duly submitted to the commanding officer.

Drainage. *VI. Drainage.*—As stated in last year's report, the natural drainage of Shillong is excellent. No change of any kind took place during the year. The drainage at Jowai is also good. The fort and lines stand on a hill. A piece of swampy ground at the foot of this hill was dammed up at one end and converted into a tank a few years ago. With the exception of this piece of water, the ground near the fort is quite dry.

Conservancy and latrines. *VII. Conservancy and latrines.*—The conservancy at Shillong and Jowai has been fully described in last year's report, and there has not been any change of importance since then. The trench system of latrines continues in force to a certain extent at one end of the lines, where a movable covered latrine screen has been provided. The system is not, however, in much favour. The men prefer, as previously stated, to resort to the jungle, of which there is a wide extent at the back of the lines. As there are no habitations in the vicinity, and as the water flows away from the station in that direction, the practice was not found to be productive of danger or nuisance of any kind. Running sentries have been placed, on my recommendation, near certain places within the cantonment limits, to which men were in the habit of resorting, and thereby endangering the purity of the water-supply.

Hospital latrines. The hospital latrines are carefully managed on the dry-earth system. A square piece of ground, about an acre in extent, near the hospital was fenced in by the dooly-bearers during the year. The night-soil from the latrine is regularly buried in shallow trenches in this enclosure, and trenches, sheltered by simple mat screens, are also kept open in it for the use of convalescents and such of the sick as choose to use them. These trenches are in much favour, and men prefer them to the regular latrine.

Water-supply. *VIII. Water-supply.*—The water-supply of the lines in Shillong is obtained mainly from a perfectly pure hill stream, called the Oom Jaisee. This water is excellent in quality and abundant in quantity at all times of the year. The water-supply at Jowai was fully described in last year's report.

Diet, &c. *IX. Diet, &c.*—Rations of attah, dhal, ghee and salt were supplied as in the previous year by the Commissariat Department. They were, as a rule, of fair quality, and few complaints were made concerning them. The Bazar Committee, consisting of a few native officers, examine the rations before issue and report on their quality. As stated in last year's report, the present system of supplying rations is one of unmixed advantage to the men.

There is a large market held in Shillong every eight days, and a smaller one every four days. Potatoes and other vegetables, and different kinds of fruit, chiefly plantains, are abundant in the summer months; but in the cold weather the potato is the only vegetable procurable. Oranges and limes, however, are very plentiful at this season, and are sold very cheaply.

Meat is scarce and dear here at all times; pigeons and goat's flesh, the meat in most request amongst the sepoys, selling at a very high price. A pigeon costs 3 annas; milk also sells at 3 annas a seer, and sometimes cannot be procured even at that price. Under the circumstances, the dieting of men in hospital becomes often a matter of great difficulty.

The meat in most esteem amongst the hill people (Khasias, &c.) is pork, the flesh of the village pig. This they consider a great luxury. Few of the sepoys, however, think of using it.

Physique. On the whole, the men of this regiment look stout and well-nourished; the physique of the corps having undergone a remarkable improvement since the regiment has been stationed at Shillong. The men of the Assam local corps—*viz.*, of the 42nd, 43rd and 44th Regiments—are comparatively well off. In addition to the ordinary pay of a sepoy, each man receives Assam batta at the rate of 2-8 a month. Thus a private's pay is Rs. 9-8 a month; out of this, Rs. 3-8 a month is deducted for his rations, worth at local rates not less than 7 or 8 rupees, leaving him Rs. 6 to meet all other expenses. There is an excellent market at Jowai every 9 days, and food is more plentiful and cheaper than in Shillong. At the outposts of Chargola and Allynuggur, food of all kinds is cheap, and game abundant, so that the men can occasionally supplement their rations by a slice of venison or of wild pig.

Clothing. *X. Clothing.*—The clothing of the regiment was exactly the same as in previous years. Woollen clothing is worn all through the year in Shillong. The native or undress clothing of men in hospital was frequently found to be very scanty.

Digitized by Google

Bedding. The utmost attention was paid to the sufficiency of the bedding of the sick. In all cases where bedding was deficient, a report to that effect was made to the native officer of the man's company, who had the deficiency supplied as soon as possible. Good blankets are usually kept in store by the quartermaster, and are sold to the men at cost price.

Boots. Ill-fitting boots, as in previous years, were the cause of many days' loss of service. There were 108 admissions for "blisters of the feet" during the past year. Many of these abrasions become intractable little ulcers, with spongy edges, and often take weeks to heal.

Duty, &c. *XI. Duty, &c.*—The duty at head-quarters consisted of the ordinary parade work, guard duties and musketry. The only men who were engaged in field service during the year were those of the detachment in the Duffla and Naga Hills. There was some fighting in the Naga Hills, but none of our men were killed or wounded. Nights in bed, average at head-quarters, all ranks, 4·9. The average number of nights in bed in detachments was between 4 and 5.

Hospitals. *XIV. Hospitals.*—The hospitals at Shillong and Jowai were fully described in last year's report. The ventilation of the head-quarters hospital was greatly improved by fixing the fan-lights over the doors and windows on pivots and attaching pulleys and cords, so that they can be now readily opened and closed.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	...	...	826·6
Absent	...	...	...	...	...	63·4
				Total	...	890·0

Station.	Period		Strength.	Total number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Gauhati and Shillong.	1st Jan. 1875	31st Dec. 1875	551·7	833	8	32·4	150·9	1·4	5·8
Depôt at Shillong ...	Ditto ...	10th Feb. 1875	229	43	...	24·9	166·8	...	10·8
Detachment at Jowai ...	Ditto ...	31st Dec. 1875	53	58	...	1·3	109·4	...	2·4
Ditto Allynuggur...	6th Mar. 1875	Ditto ...	46	83	...	6·2	218·8	...	13·4
Ditto Chargola ...	13th Ditto ...	Ditto ..	46	50	...	1·5	134·7	...	3·2
Ditto Duffla ...	1st Jan. 1875	28th Mar. 1875	196	36	...	2·9	77·	...	1·4
Ditto Gohpur ...	20th Mar. 1875	26th Apl. 1875	51	5	...	2·	111·7	...	3·9
Recruits at Gauhati ...	8th Ditto ...	26th Mar. 1875	56	6	3	1·4	205·	102·5	2·5
Total ...	...	...	826	1,114	11	43·9	134·86	1·33	5·31

Number of deaths in hospital 11; out of hospital, 3; total, 14;	per cent. of total strength	...	1·57
„ invalided 8;	„ „	...	·90
„ sent on sick leave 3;	„ „	...	·34
„ of days spent in hospital, 16,058;	per admission, 14·4;	per man of total strength	...	18·00
„ „ on sick leave, 600;	per man, 200;	„ „	..	·67
Total temporary loss of service per man of total strength			...	18·67

Mortality. From this it may be seen that the sickness, mortality and invaliding of the regiment in 1875 contrasts most favourably with that of previous years. The total number of deaths was only 14, compared with 27 in 1874 and 26 in 1873. The deaths in hospital were only 11, compared with 17 in 1874 and 21 in 1873, and 3 of these 11 were due to cholera which attacked a party of recruits in Gauhati on their way to join head-quarters. These men were undoubtedly infected with the disease on the Brahmaputra during the steamer-journey from Dhubri to Gauhati.

Cholera.

The total number of days spent in hospital was also considerably less than usual, being only 16,058, compared with 18,872 in 1874, and 18,337 in 1873. Eight men were invalided for pension, compared with 11 in 1874 and 9 in 1873. Fourteen were discharged as physically unfit, all men of short service. Three men were granted sick leave, compared with 7 in 1874 and 7 in 1873. On the whole, the health of the regiment shows a marked improvement, and this is entirely due to the fact that it has been stationed in the healthy hill climate of Shillong throughout the year. Now that the men have got thoroughly acclimatized, and have gradually provided themselves with warm clothing suitable to the cold of the weather here, their health has improved wonderfully.

Principal causes of sickness. *XVI. Principal causes of sickness.*—Malarious fevers, dysentery, diarrhœa and chest affections were, as usual, the chief diseases. A very large proportion of the cases of ague and dysentery occurred in men who had gone to the plains either on duty or on leave during the

Digitized by Google

rains. Temporary leave for a month or so is often granted to men in the rainy season. Most of them go to Gauhati. The Terai country between it and Shillong is most unhealthy. It would seem to have been especially so last year owing to the heavy rains, for nearly every one of the men who went down in the months of June, July, August and September were attacked with ague, dysentery, or diarrhœa within a week of their return to Shillong. An unusually large number of these cases of ague were complicated with affections of the spleen. Several severe cases of pneumonia came under observation. Of the 13 cases treated, however, only 1 died. Blisters of the feet caused a large number—*viz.*, 108, or 9 per cent.—of the admissions. Blisters of the feet.

There were 9 cases of cholera admitted during the year,—*viz.*, 6 amongst the recruits at Gauhati, 1 at Chargola, and 2 at Allynuggur. These latter would appear to have been cases of diarrhœa rather than of cholera, as all three recovered. No cases occurred at head-quarters. One case of well-marked enteric fever occurred at Shillong in August. The man recovered after a long illness. Cholera.

XVII. Principal causes of mortality.—Of the 11 deaths in hospital, 8 occurred at head-quarters and 3 in the quarantine hospital at Gauhati. Three deaths were due to remittent fever, 3 to cholera, 1 to phthisis, 1 to pneumomia, 1 to dysentery, 1 to diarrhœa (chronic), and 1 to hypertrophy of spleen with extreme anæmia. Of the 3 deaths out of hospital, 1 man died on sick leave, 1 in the 42nd hospital at Gauhati, and 1, a recruit, died of cholera immediately after landing from the steamer at Gauhati. Principal causes of mortality.

XVIII. Epidemics.—With the exception of the cholera which attacked the recruits at Gauhati, there was no epidemic during the year. This body of men, 56 strong, reached Gauhati, by steamer from Dhubri on 8th March. One man died shortly after landing. The detachment was immediately put into quarantine. Within the next four days there were 6 admissions for cholera. Out of this number, 3 died. There were no other cases. The detachment joined head-quarters in good health on 26th March. Epidemics.

XIX. Vaccination.—Five men and between 20 and 30 children were vaccinated in the regiment in 1875. The 5 men were recruits who had not been previously protected by either small-pox or inoculation. The regiment is thoroughly protected against small-pox. When recruits are medically examined for enlistment, a note of their state of protection with regard to small-pox is made, and all doubtful cases are afterwards vaccinated at a convenient time. Vaccination.

XX. Recommendations.—In April the necessity of enforcing the conservancy of one of the streams in cantonments, sometimes used for drinking purposes, was brought to notice. Three running sentries were accordingly placed at intervals along its banks. No other recommendation was found necessary. Recommendations.

XXI. Recruiting.—Seventy-five recruits were examined by me at head-quarters for enlistment during the year. Of these, 23, or 30 per cent., were rejected as unfit. The causes of rejection were as follows:— Recruiting.

Poor physique, below regimental standard	8
Hypertrophy of spleen	3
Anœmia and poor muscular development	3
Bad chest	5
Scrofula	2
Defective vision	1
Varicose veins	1

Together with these, a batch of 56 Goorkha recruits was enlisted in the Goruckpore district in January. These men were examined and passed by a medical officer before enlistment. Four died of cholera on the journey to head-quarters. Out of the remaining 52, I found 12 men at least whom I would not have passed had they been examined by me originally. As they had been already passed by a medical officer, and as they had come such a long way from their homes, it was not considered advisable to discharge them immediately. Four, however, were found to be quite unfit for service, and had to be discharged after the lapse of a few months.

Inspection.—Inspected by Dr. Bow, Deputy Surgeon-General of the Dacca Circle, on the 6th March 1876. He reports that the lines are well situated, being built on two oblong rounded hills free from jungle and trees. The valley separating the right and left wings forms the parade ground. When the wives and children of the sepoys are with them, the crowding is excessive. In one room, probably the most over-crowded, there were no less than nine inhabitants; but the children looked strong and healthy. Inspection.

There was one latrine with a corrugated iron roof, but it is not used, as the men preferred to go over a hill outside of cantonments and down nullahs for necessary purposes. The hospital is described as "a superior stone building," and was originally intended for the Eurasian Battery formerly stationed at Shillong. At times, Dr. Bow writes that there is a great want of ventilation in the hospital, and he had noticed on several occasions, especially late in the evening, that the atmosphere was anything but pure; he considers roof ventilation absolutely necessary. Latrine.

Digitized by Google

42nd Regiment (Assam) Light Infantry—Gauhati.

Year.	Station.	Per. cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870	Dibrugarh	159·07	1·6	4·1
1871	Ditto	146·08	1·8	3·5
1872	Ditto	197·02	5·8	4·6
1873	Ditto	144·05	1·4	3·5
1874	Gauhati, April 1874 ...	112·02	4·9	3·4
	Average	152·01	3·1	3·8
1875	Gauhati	143·67	1·78	4·47

Medical Officers.

I. Medical Officers.—

Names.	Distribution.	From	To
Surgeon-Major J. B. White	Head-Quarters, Duffla Field Force ...	1-1-75	18-2-75
Surgeon J. Wilson, M.D.	Head-Quarters, Naga Field Force ...	19-2-75	16-4-75
„ „	Head Quarters, Gauhati ...	17-4-75	31-12-75
Surgeon E. G. Russell, M.B.	Regimental Depôt	1-1-75	16-4-75
Medical Officer (Civil), Tezpur	Detachment, Tezpur	1-1-75	31-12-75
Medical Officer (Civil), Nowgong	„ Nowgong	1-1-75	31-12-75
Hospital Assistant	„ Naga Escort (Survey).	23-11-75	31-12-75

Surgeon J. Wilson M.D., has written this sanitary report.

Location and movements.

II. Location and movements.—(*a.*) Regimental depôt at Gauhati until joined by head-quarters, 17th April 1875.

(*b.*) The head-quarters of the regiment served in the Duffla campaign until the 19th February 1875. It was then divided into two portions: one, consisting of the healthiest men, proceeded on the Naga expedition; the remainder went, on the breaking up of the Duffla Field Force, to Tezpur.

(*c.*) The above-mentioned portion of the head-quarters detachment of the Duffla Field Force proceeded to the Naga Hills on active service, being joined *en route* by a portion of the Tezpur detachment, so as to make up the strength to 252 men. They finally rejoined the depôt at Gauhati on 17th April 1875.

(*d.*) The Tezpur detachment left that place on 14th February 1875, and, parting with a portion to the Naga force (head-quarters), arrived at Gauhati on 27th February 1875. They were replaced at Tezpur by the remnant from the Duffla Force on the 26th February, and this detachment was again relieved in September. The detachment is relieved yearly in September.

(*e.*) The detachment at Nowgong was relieved in September—yearly relief.

(*f.*) An escort for the survey party in the Naga Hills (154 men) started on 23rd November 1875, to remain there during the cold weather 1875 and 1876.

(*g.*) There was also a small detachment at the Oodulguri fair of 50 men in February and March. There was no record of sickness kept of these, but there was no mortality.

Topography, physical geography, &c.

III. Topography, physical geography, &c.—The topography of the station of Gauhati and the surrounding country has been fully described on previous occasions. The following sanitary defects militate against the health of the troops. The station and cantonments are placed in the centre of a low swampy tract of ground below the high flood level of the Brahmapootra, and receiving the drainage of the range of low hills to the south. The cantonments are liable to be inundated during the months of July, August, September, and part of October, and in no part is the subsoil water a greater depth than one or two feet from the surface. The alteration effected in the out-flow of the water from the swamp to the south of the station has had no influence in relieving the cantonments from the flood-water of the rains. There are, it is stated, two tanks which are particularly objectionable,—one in the centre of the lines, a mere reservoir for drainage; and the other at the north-west corner of cantonments close to the cemetery.

Digitized by Google

The principal meteorological phenomena of the year were a rather low average rainfall and an early ceasing of the rains. The mean maximum temperature of the year was higher than had been recorded in the three years immediately preceding. As in former years, the recruits have been the greatest sufferers from climatic influences, and, amongst old soldiers, the Sikhs. Meteorology

V. Lines, &c.—There has been no change in the lines during the year. In consequence of there being nearly half the regiment absent for the greater part of the year, there was nothing like over-crowding. The huts are small and dark, but they have been kept clean and in good order. The through-and-through ventilation is good, and the surface drainage excellent in the lines themselves, as they are elevated in a slight degree above the surrounding swamps. Lines.

VI. Drainage.—There is no natural drainage from this hollow in which the station is situated. The artificial drainage is as imperfect as can well be conceived—very excellent and pretty to look at, but on examination only found to run from swamp to swamp, each of the swamps being a mass of decaying vegetables, and in many cases animal débris. As before observed, the mere surface drainage of the lines is very good indeed, but from the months of April to October, the river drainage from this leads nowhere; and it can hardly be otherwise, the station being absolutely lower than the high flood level of the river. Drainage.

VII. Conservancy and latrines.—With the exception of the hospital latrines, which are on the dry-earth system, there is no system in force in Gauhati, trench or otherwise. The men, living in a small station with a large extent of jungle close by, naturally resort there. There is in cantonments only one small portion of ground at all available for the trench system, and that would soon be exhausted; and as for the fixed system, there is no carriage at the disposal of the military authorities for removal of night-soil. Granting that any system of latrines is better than none, and that the present system is unsanitary, still, no matter what method was adopted for the sepoys, it would have no effect on the surroundings of the station of any sort or kind whatsoever; the reason being that the sepoys form but a small part of the population of Gauhati, all of whom resort to the jungle. The conservancy of the lines is well kept up, and a man is specially appointed to look after the cleanliness of the station. There are also sanitary inspections of the lines and bazar weekly by the quartermaster and medical officer. Conservancy and latrines.

VIII. Water-supply.—Hitherto the supply, at least for the past two years, has been derived from the Bramapootra. The water is good, *i. e.*, free from dissolved impurities, and the supply, of course, unlimited. There is, however, this difficulty with regard to it, that it is at a distance of three-fourths of a mile from the lines. It is also during the rainy months loaded with suspended impurities, both mineral and organic, and, without purification of some sort, is decidedly injurious. It was therefore considered advisable to try to obtain water which might be both nearer to the lines (so as more especially to prevent the temptation of using tank water) and free to a greater or less extent from the faults of the river water. It was decided to build two pucka wells, and these are now in course of construction. Water-supply.

IX. Diet.—Rations are issued weekly by the Commissariat Department, the men receiving attah or rice at their pleasure. The system has been described at length in former reports; to me it seems to work well, and none of the men can be said to be under-fed. There are some men who under no system will feed themselves properly, but the main portion of the regiment is well fed; and fruit and vegetables are cheap and plentiful in the bazars. Many of the men are meat-eaters; and goats, jungle pigs and wild animals of different kinds are consumed with relish and advantage. Diet.

X. Clothing.—This is the usual costume of the sepoy in India, but of the rifle-green colour. In the hot months white drill is worn. I doubt if this is the best for the Assam stations. A thin serge would, I believe, be much better for this damp climate, or flannel of some kind; but unfortunately it is neither so cleanly nor so durable as the drill, and would come much more expensive to the men. As a rule, the native clothes worn by the men off duty is very suitable, and care is taken that all the men are properly provided with the regulation articles. They are all provided with the regulation ammunition boot, and when worn with a stocking, little can be said against it. Without stockings, or at all events a "patti," it is apt to gall. It is a little too high at the ankles, and a good many of the ulcers returned are due to this cause. During the Duffla expedition a service boot of what is called the "stable pattern" had been served out to the men. This was lower at the ankle, and as the men all wore bandages instead of garters, galled feet and ankles were almost unknown, though the marches at times were long and severe. The men of the 42nd all wear the pugree, which has the advantage of both appearance and usefulness. Clothing.

XI. Duty and employment.—This has never been excessive, consisting of the ordinary station duties, drills, parades, &c. The average number of nights in bed were:— Duty and employment.

Gauhati=$6\frac{1}{8}$; Tezpur=$7\frac{2}{3}$; Nowgong=$5\frac{1}{3}$

During the campaigns in the beginning of the year, the duty was at times of a heavier character, but the men were in such good health that they did not suffer.

XIII. Marches and service.—As the two campaigns in which the regiment took part in the beginning of the year are described at length in the special reports on the subject, it is needless to enter into them very fully here. The chief difficulties that had to be encountered were the great amount of rain and the hilly nature of the country. The wet weather in the Duffla hills, combined, as it was, with a tolerably long stay at different times in a thick jungle, Marches and service.

Digitized by Google

produced a lot of dysentery; while in the Naga hills, the country being more open and the men constantly on the move (from the limited time that the campaign had to be finished in), the sickness was practically *nil*,—the only patients suffering from anything but accidents being two men who had been left at an outpost at the base. Though the duty was at times heavy, and the marches over very steep hills, the men were in the best spirits, and never flagged or failed in the least.

Hospitals, &c. *XIV. Hospitals, &c.*—These have been described in former reports. There is good accommodation for 50 men; the site is as healthy as any in cantonments; ventilation is good, and the men are obliged to provide themselves with proper clothing and bedding. There are no quarters for the hospital assistants or medical pupils, and that for the inferior establishment is insufficient. These faults have been pointed out more than once.

Sickness, mortality and invaliding. *XV. Sickness, mortality and invaliding.*—Strength of the Regiment—

Present	...	...	...	...	783·06
Absent	...	...	...	...	71·77
			Total	...	854·83

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Duffla Expedition.	1st Jan. 1875	25th Feb. 1875	258	47	...	8·48	118·65	...	3·28
„ at Naga Expedition...	26th Feb. „	16th Apl. „	252	28	...	6·36	66·62	...	2·52
„ and Depôt at Gauhati	1st Jan. „	Ditto.	434·94	569	7	18·07	130·84	1·60	4·20
Detachment at Tezpore ...	Ditto.	Ditto.	167·13	371	5	10·90	221·92	2·99	6·52
„ at Nowgong ...	Ditto.	Ditto.	65·77	101	...	3·60	153·56	...	5·47
„ Naga Survey Escort.	23rd Nov. „	Ditto.	152·75	14	2	2·57	75·10	10·72	1·68
Total ...	...	...	783·06	1,125	14	35·06	143·67	1·78	4·47

Number of deaths in hospital 14; out of hospital 8; * total 22;	per cent. of total strength	...	2·57
„ invalided 32;	„ „	...	3·74
„ sent on sick leave 18;	„ „	...	2·10
„ of days spent in hospital 12,859; per admission 11·43;	per man of total strength	...	15·04
„ on sick leave 2,453; per man 136·27;	„ „	...	2·87
Total temporary loss of service per man of total strength		...	17·91

* One man died out of hospital in 1874, but was not struck off until 1875.

Principal causes of sickness. *XVI. Principal causes of Sickness.*—Fevers, of course, form the largest group, ague alone causing 444 of quotidian and 28 of other kinds. This is only to be expected from the characteristics of the station as described in paragraph *II.* Of the 7 cases of remittent fever, 5 occurred at Gauhati. Small-pox broke out in April, but by strict isolation did not spread. It never existed in the lines in an epidemic form. As vaccination is spreading very fairly amongst the civil population, it is to be hoped this disease will soon decrease very much. Lumbago appears to be a very common disease amongst the old Hindustanis, and it is generally associated with a low state of health.

Syphilis. The amount of syphilis in the regiment is not large, and the secondary forms of that disease caused only 13 admissions. As most of the men have formed temporary or permanent connexions with the natives of Assam, the small percentage of secondary syphilitic affections is thus probably accounted for. Both the cholera cases can hardly be called such, as one is said to have been caused by eating raw cucumbers, and the other by eating a sort of dall or wild rice-grass. Diseases of the digestive system were also very numerous, dysentery and diarrhœa giving 171 out of a total of 213. The detachment at Tezpore gave a much larger percentage than that at head-quarters. These diseases may in some cases be attributed to the irritation caused by suspended matter in the river water, but more often to drinking impure tank water. In other cases it was traced to over-eating unripe fruit and vegetables; and in others again, as in the Duffla expedition, to the damp to which the men were exposed. Of skin diseases, ulcers head the list, but most of these cases were rather due to neglected foot-bites occurring in men in a low state of health. Though the ammunition boot is the best the men can get, still, unless worn with stockings, it is sure to blister the foot and gall the ankle. The cases of general debility are all attributable to frequent attacks of malarial fever.

Mortality. *XVII. Mortality.*—Of the 14 deaths in hospital, 7 occurred at Gauhati, 5 at Tezpur, and 2 in the Naga Escort (Survey). Small-pox caused 3 out of 6 admissions. The cases were very severe, though the epidemic was so confined in extent. The men who died were all weakly subjects.

Cholera. Cholera, as above mentioned, caused 2. On the whole, the year has not been a fatal

Digitized by Google

one, though it shows a higher percentage of sick than 1874. Tezpur seems to be the most unhealthy of the stations both as to sickness and mortality, and this corresponds with what has been observed in former years.

XVIII. Epidemics.—With the exception of the slight outbreak of small-pox and a few cases of chicken-pox, there was no other epidemic of any kind amongst the troops during the year. Epidemics.

XIX. Vaccination.—There were no vaccinations done during the year, at least since the head-quarters of the regiment rejoined from service. At the time of the outbreak of small-pox, it was suggested by the Deputy Surgeon-General of the circle that some vaccinations should be attempted, in despite of the unfavourable time of the year, and lymph was accordingly applied for. Before its arrival, however, detachments had been relieved, and the Sikhs, who were now at head-quarters, were found well protected, either by small-pox or vaccination, principally by small-pox. During the present cold weather (January), all recruits and doubtful and unprotected cases are being vaccinated, besides as many women and children as possible. Vaccination.

XX. Recommendations.—In addition to the ordinary routine recommendations, parades were advised to be discontinued for a short time in September. This was immediately complied with. Recommendations.

XXI. Special observations.—The general conclusions to be derived from the foregoing observations are: *First*, that none of the stations, either of head-quarters or of the detachments, are healthy; that the cause of this unhealthiness is due principally to the sites, secondly, to the unfavourable climate. An unhealthy site and a high yearly temperature, combined with a great humidity, are factors that play a large part in the production of a high rate of sick. These are all to be met with in the stations of Tezpur, Nowgong and Gauhati. *Second*, the second fact that recruits are the most unhealthy, and until they become what is called acclimatised, they give a higher ratio than old soldiers. On close examination, however, I believe that it will be found that this acclimatisation is nothing more than that those men who cannot stand the climate either die off, or have to be invalided. I can scarcely believe in the true acclimatisation of up-country men. Though there is no reason to think that Hindustanis stand the climate of Assam worse than any other race, they are not now being enlisted to any extent. Of the Sikhs and Goorkhas, those who can stand the first five years will generally do very well; and though this may seem an argument in favour of the theory of acclimatisation, I think it is not so. After a time, the men find out the mode of life that suits them, and adopt it more or less instinctively, and meanwhile all weakly men are weeded out. But if once the malarious poison enters thoroughly into the system, the days of health of that man are numbered. Special observations.

Dr. Bow, Deputy Surgeon-General of the Dacca Circle, made his sanitary and medical inspection of this regiment on the 11th March 1876. Inspection.

He writes that "it would be needless repeating in detail the disadvantages this station labours under in regard to drainage; suffice it to say that it is impracticable to make any decided improvement."

There are no latrines for the men of the regiment, and Dr. Bow considers that their erection would be a comparatively useless measure, unless they could accommodate the police and large civil population besides. The regimental huts were in good condition and well ventilated. The hospital consisted of two good buildings, well raised and well ventilated. There was a want of servants' houses, and no accommodation for the hospital assistants, except in the corner rooms of the hospital. Latrines.

44th Regiment (Sylhet) Light Infantry—Dibrugarh.

The annual sanitary report has been compiled by Surgeon-Major J. B. White, who was in medical charge of the regiment at the end of the year 1875.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Shillong	94·4	1·1	2·9
1871 ...	Ditto	182·4	1·9	5·8
1872 ...	Ditto	171·1	4·8	5·1
1873 ...	Ditto	148·0	4·1	5·3
1874 ...	Dibrugarh, April 1874	209·9	2·8	5·4
	Average ...	161·16	2·94	5·1
1875 ...	Dibrugarh ...	199·65	2·94	5·12

I. Medical Officers.—Surgeon H. K. McKay held medical charge of the regiment from January 1st to February 24th, on which date he was relieved by Surgeon-Major J. B. White, who continued in medical charge to the 31st December. This officer also held medical charge of the detachment on service with the Duffla Field Force from January 1st to February 23rd. Medical Officers.

The detachments at Sachiya, Golaghat, Jaipur and Pabamukh were in subordinate medical charge of hospital assistants during the year.

Digitized by Google

Locations and movements.

II. Locations and movements.—Head-quarters, average strength 428·66 men, was stationed at Dibrugarh during the entire year. Detachment of 2 officers and 252 men was employed on field service with Duffla Field Force from January 1st to February 23rd. Detachment consisting of 5 officers and 322 men was employed on field service with Naga Field Force from February 27th to April 11th. Detachment of 1 officer and 182·41 men at Sachiya and Pabamukh during the entire year. Detachment of 44 men at Jaipur from 1st January to 27th August. Detachment of 54·77 men at Golaghat during the entire year. The three last detachments were relieved every six months.

Topography, &c.

III. Topography, &c.—A description of the topography of this station has been given in former reports, and nothing under this head has been observed during the past year worthy of record. The rainfall of 1875 was some 10 inches below the average, and 35 inches below that of 1874. The meteorological conditions of the year were favourable to health. Earthquakes were frequent during the last four months of the year.

Lines, Barracks or huts, &c.

V. Lines, Barracks, &c.—The huts both at head-quarters and for detachments have been entirely rebuilt during the past year, and on, it is said, a more roomy and substantial plan than before. There was no over-crowding in these huts. No change has been made in the drainage, but it is reported to have been most carefully attended to during the year.

Conservancy, and latrines.

VII. Conservancy and latrines.—During the past year a regular system of latrines has been introduced for the first time in this station. The first plan tried was movable box latrines on wheels, the night-soil falling into trenches which were filled up and the latrines shifted to new trenches. This arrangement was found to be impracticable; in the first place, on account of the number of the machines which would be necessary, and there not being sufficient money in the local cantonment fund to meet the first cost of even one-fourth of the number of movable latrines required; and in the next place, the insufficiency of the establishment required to move such weighty machines daily. The plan finally decided upon was ordinary trench latrines enclosed within high screens made of mats on a bamboo frame with pegs to fasten in the ground; when the trenches are filled up, new ones are dug in another place, and the mat screens are readily and easily shifted to the new ground. This plan has been found to work admirably; the sepoys and their families resort to them much more generally than was expected, and appear to appreciate being relieved of the necessity of having to frequent the patches of jungle in the vicinity of the station, which was the custom hitherto.

Latrines.

The latrines have been maintained in good order since their establishment; but when they come into universal use, which I foresee they will, an additional staff of mehters will be required. No special establishment of sweepers has as yet been sanctioned, nor will the local funds admit of any being entertained. The present latrines are to a certain extent experimental, and are now worked by the sweepers attached to the companies. These men have already nearly sufficient employment on their legitimate work in the lines. When the latrines come into general use, additional mehters must be provided; otherwise the latrine system, instead of being a great sanitary improvement, will become an actual nuisance.

Lines.

The lines have been kept scrupulously clean throughout the year, all garbage or refuse matter being removed to ash-pits which are filled up at occasional intervals when necessary. The men of this regiment do not keep cows or other cattle, and very few poultry. The consequence is that it is a comparatively easy matter to keep the lines clean and orderly.

Water-supply.

VIII. Water-supply.—There has been no change in source of water-supply during the year. It is still drawn mainly from pucka wells. The river was, however, open for a longer period than usual this year, *i. e.*, from April to November. The water obtained from the wells has been of excellent potable quality throughout the period. It has never, however, been submitted to regular quantitative analysis. During the period the river is open, there is an ample supply of water for bathing, washing clothes, and such like purposes; in the immediate proximity of the sepoys' lines, for the remainder of the year, recourse is had to the new channel of the river, which is, however, more than half a mile distant. There is no necessity for any special arrangements for watering animals, as few are now kept in the station.

Diet.

IX. Diet.—All the principal necessaries of diet are supplied by the Commissariat Department under the system of rationing in force for regiments stationed in Assam. All the articles thus supplied—attah, rice, dhall, ghee and salt—were of unexceptionable good quality throughout the year. Indeed, only on one occasion was any complaint made regarding the quality of the rations, and on that single occasion it was found to be uncalled for. Vegetables, fish, poultry and condiments are procurable in sufficient quantities, but at very high rates. Milk is abundant, although dear; it is supplied by Nepaulese goallas, who have established themselves near the station for the purpose of supplying the regiment, and who keep large herds of buffaloes. These animals are pastured on the rich chur soil lying between the station and the Brahmapootra river. The milk is of excellent quality. No instance of improper or underfeeding has come to my notice. Such is unlikely to occur in a corps composed almost entirely of Goorkhas, who draw comparatively liberal pay, have no thrifty or saving tendencies, and spend all they receive on their daily wants, without any view to the future.

Clothing.

X. Clothing.—The ordinary green cloth uniform is worn on all duties from latter end of October to middle of April, with greatcoats at night in the months of December, January and February. From latterend of April to October, light American cotton drill, dyed green,

Digitized by Google

is worn. This arrangement is found best suited to climate, season, and the duties the men have to perform. The boots in use are English-made, of the army ammunition pattern, and are all that can be desired. The undress clothing worn by the men is sufficient. Boots.

XI. Duty and employment.—The duties the regiment has performed during the year have been arduous and unremitting, but rarely so harassing or severe as to exercise any appreciable bad influence on the health of the men. Up to the middle of April, the bulk of the corps was on field service with the Duffla and Naga Expeditions, and had to undergo the inevitable hardships attendant on hill warfare. On their return to cantonments, they were constantly employed during the entire hot and rainy seasons constructing their lines. This finished, the drill season with musketry commenced, so that there has been no period of rest from almost continuous duty during the whole year. Duty and employment.

The average number of nights in bed for each grade was—Native officers 4·33, havildars 4·80, naicks 4·72, buglers 4·66, sepoys 5·5. Nights in bed.

XII. Exercise, amusements and occupations.—The remarks I made under this heading last year apply equally to the period under review. The men were so constantly employed on duty that there was no time left for amusements or other occupations. A few of the sepoys endeavoured to find "shikar" on Sundays, but not with much success. No gardens have been started by the men, and any attempt on the part of their officers to encourage their doing so would be quite fruitless while the present system of frequent relief continues. The sepoys are unsettled and take no interest in any station from which they know they will be removed in one or two years. Exercise, amusements and occupations.

XIII. Marches and service.—A detachment of 2 officers and 252 men was employed on field service with the Duffla Expedition from January 1st to February 23rd. A detachment of 5 officers and 322 men was on service with the Naga Field Force from February 27th to April 11th. A small party of men under a native officer acted as escort to the late Lieutenant Holcombe's survey in the Eastern Naga Hills from January 1st to February 7th. Twelve of their number were killed or died of wounds received in the massacre at Nime on February 2nd. A full account of the camps, places, incidents of service, &c., &c., by detachment on field service has already been given in the special reports of the Duffla and Naga Expeditions. Marches and service.

XIV. Hospital.—The hospital at head-quarters and detachments have been described in former reports. No additions or alterations were made during the year. All the hospital buildings were maintained in good order and repair. The only instance of over-crowding occurred in March and April, when the head-quarters hospital was used as a depôt hospital for the sick and wounded of the Naga Field Force. As the building is so admirably ventilated, no evil resulted from the over-crowding. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	812·91
Absent	...	...	...	...	69·08
			Total	...	881·99

Station.	Period. From	Period. To	Strength.	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of Strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Dibrugarh	1st Jan. 1875	31st Dec. 1875	428·66	971	5	26·92	226·52	1·16	6·28
Detachment at Sadiya and Pabamukh	Ditto ...	Ditto ...	182 41	346	1	8·83	189·68	·54	4·84
Ditto at Golaghat ...	Ditto ...	Ditto ...	54·77	125	...	2·90	228·22	...	5·29
Ditto at Jaipur ...	Ditto ...	27th Aug. 1875	44	60	...	1·47	208·15	...	3·34
Ditto with Naga Field Force ...	5th Mar. 1875	11th Apl. 1875	322	53	...	7·81	157·52	...	2·42
Ditto with Duffla Field Force ...	1st Jan. 1875	23rd Feb. 1875	152	68	1	5·67	302·13	4·39	3·73
Total ...	...	...	812·91	1,623	7	41·64	199·65	·86	5·12

Number of deaths in hospital, 7; out of hospital, 19; total, 26; per cent. of total strength	...	2·94
„ invalided ... ... 21; „ „	...	2·38
„ sent on sick leave ... ... 12; „ „	...	1·36
„ of days spent in hospital, 15,199; per admission, 9·36; per man of total strength	...	17·23
„ „ on sick leave, 2,908; per man, 242·33; „ „	...	3·29
Total temporary loss of service per man of total strength	...	20·52

XVI. Principal causes of sickness.—The total number of cases treated in hospital was considerably less than in 1874, or was 1,670 against 1,820. The Principal causes of sickness.

Digitized by Google

principal decrease was observed in malarial fevers, and was considered due to the fact that the large number of these cases was caused by the exposure the regiment was subjected to in maintaining the Duffla blockade from January to May 1874, as well as, perhaps, to 1875 being a more healthy year than the one preceding. There was an increase of bowel complaints, which chiefly occurred in the detachment employed in the Duffla Expedition. There were 92 cases of blistered feet; but the medical officer observes that from the peculiar urgency with which the Naga Expedition was conducted, with continued forced marches in the plains at an advanced period of the year, blistered feet were inevitable. There has been a most satisfactory absence of any kind of serious disease throughout the year.

Blistered feet.

Principal causes of mortality.

XVII. Principal causes of mortality.—Seven deaths occurred in hospitals, only four of which were from ordinary causes. One sepoy died from atrophy of heart whilst serving with the Duffla Field Force; one from confluent small-pox, a recruit who arrived from Nepaul suffering from the disease; one from remittent fever in the Sadiya detachment hospital; and one from dysentery. Three deaths resulted from injuries: 2 were carried in mortally wounded in the affair of the 2nd February, and the third was accidental, the man having fallen on his kukrie and divided the brachial artery, and bled to syncope before he was discovered; he was then taken to hospital and the vessel at once secured, but he sunk from exhaustion soon afterwards. Nineteen deaths occurred out of hospital: ten killed in action; one drowned whilst endeavouring to swim a torrent under fire in the Naga Hills; five recruits died of cholera on their way to join the regiment in the steamer *Prince Albert*; and one recruit of small-pox at the same time. One sepoy was accidentally drowned whilst bathing in the Dibru River; and one sepoy is reported to have died from fever whilst on recruiting duty.

3rd Regiment Native Infantry—Cachar.

Charge.

Surgeon M. D. Moriarty, M.B., has been in charge during the year, and reports as follows:—

Location and movements.

Year.	Station.	Per cent. of Strength.		
		Admissions	Deaths.	Daily sick.
1870 ...	Meerut, March 1870 ...	185·2	4·2	5·9
1871 ...	Do. do. ...	153	1·6	3·6
1872 ...	Cachar, November 1872	128·3	2·1	2·8
1873 ...	Do. do. ...	132·3	2·8	3·9
1874 ...	Do. do. ...	106·6	1·7	3·2
	Average	141·1	2·5	3·9
1875 ...	Cachar	129·06	2·57	3·26

II. Location and movements.—The head-quarters of the regiment continued at Cachar throughout the year. The detachments, strength 41 each, which were sent to Chargola and Allynegar (in the Sylhet district) at the end of last year, were relieved by the 43rd (Assam) Light Infantry, and returned to head-quarters on the 19th and 20th March, respectively. A detachment, strength 41, was stationed at Manipur till 2nd December, when it rejoined head-quarters. This detachment was relieved but once during the year, in January. As before, the outposts of Moniarkhal and Noorband, on the Lushai frontier, were occupied throughout the year; the strength of either detachment was the same as in last year, *viz.*, 31 during the hot weather and rains, increased in the cold weather to 51 in the case of Moniarkhal, and 41 in the case of Noorband. These detachments were relieved three times during the year, in February, May, and October. It is found to be next to impossible to relieve them during the rains, owing to the state of the roads, and Government will not sanction water-carriage.

Topography.

III. Topography.—The low elevation of the district in general was painfully demonstrated in the June and August floods, especially in the latter. Silchar, I believe, is somewhat less than 75 feet above the sea. There was formerly a good deal of grass ("kus-kus") jungle in cantonments. This is diminishing year by year; it is no easy matter to eradicate it. In the cold weather of 1874-75, a number of young trees were planted along the road which runs through the northern border of cantonments. They are coming on very well, and will be a great improvement a few years hence.

Meteorology.

IV. Meteorology.—The rainfall is said to have been much above the average, and was rather unequally distributed, having been excessive in the months of June and August. The river Barak and its tributaries overflowed their banks and flooded the entire country. The lines both at Cachar and at the outposts escaped from this inundation, but the officers' bungalows were not so pleasantly situated, as a rise in the flood of but another foot would have necessitated their evacuation.

Digitized by Google

V. Lines.—There is nothing in the state of the lines calling for any special remark. The huts were being repaired and put into order at the time of writing this report. Lines.

The general drainage of the station remains unchanged, but some improvements were effected in that of the cantonments, and, it is stated, with the most satisfactory results. The conservancy has been well attended to, and the "trench system of latrine" is reported to have been on the whole "markedly successful"; and in the August floods were especially valuable, as at that time the men had no choice but to make use of them. Drainage.

The two new wells which were being made in 1874 were not completed until May of last year, and the water is considered to be pure and of excellent quality. The majority of the men bathe at the wells, a few at the river.

Rations were supplied by the Commissariat up to 31st March, and their issue was then discontinued by this agency. The men, for the remainder of the year purchased their food in the bazar, and received compensation for dearness of provisions whenever the monthly rate of Rs. 3-8 was exceeded; the compensation sometimes amounted to more than Rs. 5 per mensem. Rations.

The clothing was considered as suitable in every respect. Mr. Moriarty states that there were many admissions into hospital for "blisters of the feet," and some of the cases were very troublesome and difficult to heal. The men wear no socks or bandages on their feet under the ammunition boots, and thus the sores are caused. Clothing.

As the men had an average of 12·8 nights in bed during the year, it will be considered that their duty was light; and such was actually the case.

XIV. Hospital.—The hospital has been in good repair throughout the year, and, I am happy to say, has never been in the least over-crowded. Two additions have been made: (*a*) a small store-room about 12 feet square, and a very useful addition this has proved; (*b*) a bath-room with the necessary furniture, *viz.*, a large bath on wheels, a grating, a ghurra stand with ghurras; (*c*) and a large brass vessel (*dekchi*) in which to boil water when required. The two tubs, one for Hindoos and one for Mahomedans, have not yet been received. The bath on wheels is a very useful article, as is the *dekchi*, but the bath-room is practically useless. The Hindoos never make use of it; the Mahomedans but rarely, and not very willingly.

The hospital furniture has been added to, *viz.*, two new chairs for the office, a large and excellent almirah in which I now keep the surgical instruments, poisons, &c. The beds (charpoys) are in good repair and complete.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	640·8
Absent	...	...	...	...	59·9
Total	...	...	...	...	700·7

Station.	Period. From	Period. To	Strength	Total number of Admissions.	Total number of Deaths.	Daily average number of sick.	Per cent. of strength per annum. Admissions.	Deaths.	Daily average sick.
Head-quarters at Cachar ...	1st Jan. 1875	31st Dec. 1875	509·32	648	9	16·89	127·23	1·77	3·32
Detachment, Monierkhal ...	Ditto ...	Ditto ...	39·25	96	...	1·8	244·6	...	4·58
Ditto, Noorband ...	Ditto ...	Ditto ...	34·97	33	1	·85	94·37	2·86	2·43
Ditto, Manipur ...	Ditto ...	2nd Dec. 1875	42·33	38	...	1·03	97·52	...	2·43
Ditto, Chargola ...	Ditto ...	19th Mar. 1875	41	8	...	·9	91·29	...	2·04
Ditto, Allynugur ...	Ditto ...	20th Mar. 1875	41	4	...	1·08	45·05	...	2·63
Total ...	...	...	640·8	827	10	20·9	129·06	1·56	3·26

Number of deaths in hospital, 10; out of hospital, 8; total	18;	per cent. of total strength	...		2·57
„ invalided	4;	„	„	...	·57
„ sent on sick leave	4;	„	„	...	·57
„ of days spent in hospital, 7,525;	per admission	9·1;	per man	„	... 10·73
„ „ on sick leave, 322;	per man	80·5;	„	„	... ·46
Total temporary loss of service per man of total strength					... 11·19

As regards total admissions, the year corresponds closely with 1873; the cases, however, were of much shorter duration, and were, I think, on the whole, milder than in either 1873 or

Digitized by Google

1874. The number of men invalided is very small; I anticipate it will be much greater nex year. There are several old men in the regiment getting near their full service, and there are also a few young and weakly men who have not quite sufficient service to entitle them to any pension. Of the four men sent on sick leave, three died. I have now almost set my face against granting sick leave from this station; the difficulties of the journey to Calcutta are too great for a man in a weak state even with a man to attend him.

Principal causes of sickness.

XVI. Principal causes of sickness.—Malarious fevers account for 402, or close on 50 per cent. of the total admissions, a percentage less than in 1874, and much less than in 1873. Bowel affections have been rather more frequent than in 1874, the principal entries being under dysentery, diarrhœa, and dyspepsia, which show 52, 39, and 18 admissions, respectively. Rheumatic affections give 54 admissions, a number almost identical with that of last year. There were 53 admissions for blister of feet. There were 25 admissions for chest diseases, a number considerably less than in last year; these include five cases of pulmonary phthisis. Diseases of the cutaneous system gave 41 admissions against 53 last year. Finally, venereal diseases gave 17 admissions as compared with 18 last year.

Blistered feet.

Principal causes of mortality

XVII. Principal causes of mortality.—Of the ten deaths in hospital, three were due to remittent fever, one of these being complicated with pericarditis, and perhaps with some myocarditis; one was due to chronic enlargement of the spleen and malarious cachexia; one to general debility; one to dysentery; one to diarrhœa; one to secondary syphilis (death in this was induced by mercurial poisoning), one to cholera, and one to pulmonary phthisis. Of the eight deaths out of hospital, two occurred in Cachar, and were due, one to syncope and one to accidental drowning; three were of men on sick leave, the cause in two being general debility and one pulmonary phthisis. The remaining three deaths were of men on furlough; two were due to cholera; the cause of the other is unknown.

Epidemics.

XVIII. Epidemics.—None. I may mention, however, that three cases of cholera occurred during the year. I need not say that every precaution was taken when the above-mentioned cause of cholera occurred.

Vaccination.

XIX. Vaccination.—In my report for 1873 I mentioned that the regiment was not protected against small-pox. This opinion requires modification, or rather explanation; it referred to the protection afforded by vaccination. The great majority of the men have either had small-pox, or been inoculated in early life. During the year I vaccinated 16 recruits (besides several bazar children), selecting those whom I thought least protected. The results were not satisfactory, at least as far as vaccination is concerned; nine were complete failures, and none of the others were very good. In no instance was I enabled to perform arm-to-arm vaccination. Probably the lymph was not very fresh. The two cases of small-pox which occurred during the year were both at Manipur; both were mild cases. One of the men had distinct marks of previous small-pox; the other man says he had small-pox as a child: the marks, if any, are very faint.

Small pox.

Recommendations.

XX. Recommendations.—(*a*) In May and June there was a very fatal epidemic amongst horned cattle; the river was polluted with stinking carcasses. I therefore recommended that the men should be cautioned as to the danger of drinking this water. Enquiry showed that they did not use it for drinking purposes, and but rarely for washing. (*b.*) In July, having satisfied myself that several cases of disorders of the digestive system, especially flatulent dyspepsia, were due to the use of inferior grains, I brought the subject to the notice of the regimental authorities: the practice was discontinued. (*c.*) When the cases of cholera occurred, I recommended that the men should be warned not to delay in the lines when the slightest symptoms of diarrhœa appeared; the recommendation was acted on immediately.

Special observations.

XXI. Special observations.—1. Some cases are shown under the head of "General Debility" for want of a better term. The history of these cases is pretty much as follows: loss of appetite and dyspeptic symptoms, wasting and loss of strength and spirits, occasional fever, which may become severe, more or less looseness of the bowels, with occasional diarrhœa; symptoms of spurious scurvy, *viz.*, pain in the gums and teeth, with loosening of the latter; the gums are usually swollen and pallid, not markedly soft, and but rarely bleed; there may be ulceration of the gums, especially along the edges, with falling out of the teeth. I have seen a tooth break off short, leaving a blackened fang in the alveolus; the tongue may be dry and glazed, in other cases moist, with a whitish hue; in one instance gangrene of a considerable portion of this organ occurred; the breath is usually foul, sometimes excessively so; there is rarely any marked enlargement of either liver or spleen. In the heart a functional murmur (basic systolic) is usually found, but there is no anasarca, only a little puffiness of the insteps and under the eyes, and that not always. The proper dietetic treatment of these cases is a great difficulty.

Mercurial poisoning.

2. Chronic mercurial poisoning is rarely seen now-a-days. I had one marked case of it—the case of secondary syphilis which terminated fatally; to his dying day the man never told who administered the drug to him, though I had strong suspicions myself as to where it came from. For some 12 hours previous to death there was evidence of the formation of a clot in the heart; death was very sudden—I had almost said instantaneous. The patient squatted down to urinate, rose up suddenly, and fell back dead.

Cholera.

3. In two cases of cholera I tried the treatment by hypodermic injection of chloral hydrate. One case recovered, but remained in hospital a very long time, owing to very nasty slough, which formed at the seats of injection; the other case terminated fatally. Still the chloral was not without its value; it certainly diminished the intensity of the cramps and pains.

Digitized by Google

16th (The Lucknow) Regiment Native Infantry—Jalpaiguri and Dacca.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Moradabad and Shajahanpur, December 1868.	52·2	1·6	1·8
1871 ...	Ditto ditto ...	56·9	·3	1·5
1872 ...	Jalpaiguri and Dacca ...	145·0	1·9	3·9
1873 ...	Ditto ditto ...	143·7	2·2	5·1
1874 ...	Tezpur and Dacca ...	205·1	·5	6·1
	Average	120·6	1·3	3·7
1875 ...	Jalpaiguri and Dacca ...	191·87	2·62	5·35

Surgeon E. Bovill reports as follows:—

I. Medical charge.—Medical Officers: At head-quarters at Tezpur, Surgeon Imthurn, Civil Surgeon of Durrung, was in charge from 1st January until 1st March 1875; Surgeon Bovill from 1st March to 31st December 1875. Medical charge.

Surgeon W. E. Griffith, Officiating Civil Surgeon of Jalpaiguri, was in charge of the detachment there from 1st January until 6th April 1875.

Surgeon Bovill, from 1st January to 1st March, in charge of the detachment with the Duffla Field Force.

Left half battalion, Surgeon Ghose from 1st January to 5th May; Surgeon Fullerton from 5th May to 16th December 1875. The whole regiment was in Surgeon Bovill's charge from 16th to 31st December 1875.

II. Location and movements.—The head-quarters and part of the right wing remained at Tezpur, but the greater part of the wing was with the Duffla Expedition until the 1st March, on which date it arrived at Tezpur and remained there until the 22nd March, when it left for Jalpaiguri, proceeding down the river Brahmapootra to Dhubri by steamer, from which place it marched to Jalpaiguri *viâ* Kuch Behar, arriving there on 6th April and remaining there until 1st December, on which date it marched for Calcutta *viâ* Caragola Ghât and Sahibgunge, arriving in Calcutta on 16th December, where the regiment went into camp on the maidan until the end of the year. A detachment remained at Jalpaiguri from 1st January until 6th April, on which date the head-quarters arrived at that place. The left half battalion was quartered at Dacca from the 1st January until 8th December 1875, when it proceeded to Calcutta by steamer as far as Goalundo, arrived at Calcutta on the 12th December, and remained in camp on the maidan until the end of the year. Location and movements.

The right half battalion was employed in the Duffla Expedition, and stationed at Tezpur, Jalpaiguri, and Calcutta during the year. The left half battalion was at Dacca and Calcutta during the year.

III. Topography.—The topography of Jalpaiguri (the station in which the regiment remained longest) has been previously described by Dr. McLeod in Annual Report of 1868 (with map), Dr. A. G. Grant in 1869, and Dr. W. D. Stewart in 1872. There is no difference to note in it except that the river Teesta has come nearer the lines and appears to be slowly cutting away its right bank. The most noticeable change in Jalpaiguri has been caused by the construction of a railway, which is expected to be open for traffic in the latter part of the year 1876. Tezpur was described in last year's report. Topography.

No change is reported as having occurred in the lines or huts since 1874; the drainage both of Tezpur and Jalpaiguri is surface, and at the latter place much of the surrounding country and parts of the cantonments are under water during the rains. The conservancy of the several cantonments was efficiently carried out, and a latrine, on the movable screen system, was introduced just before the regiment left Jalpaiguri. Mr. Bovill, however, is doubtful whether this latrine will work well during the rains. Lines, huts, &c. Conservancy.

At both Tezpur and Jalpaiguri it is said that there was an ample supply of good river water. The former station was situated nearly a mile from the Brahmapootra, but nevertheless the men always brought their water from it. There were also tanks and wells in the lines. As far as regards diet, it is reported that the men are supplied with rations of atta, ghee, &c., at a fixed rate of Rs. 3-8 per mensem, the Government bearing any extra expense that may be incurred in the supply. There was some difficulty in obtaining any extra articles of diet, such as vegetables, milk, meat and sweetmeats, both at Tezpur and Jalpaiguri, but more particularly at the former station. At Jalpaiguri many of the men kept cows to supply themselves with milk. Mr. Bovill states that under-feeding did not exist to any extent. Water-supply. Under-feeding.

No change has been made in the clothing during the year; the men wear the ammunition boots and seem to prefer them, but it is not stated to what extent they caused "blisters of the feet." Clothing.

Digitized by Google

Duties.

XI. Duties.—Duty and employment, consisting of parades, guards, fatigue duty, and marching. The detachment on the Duffla frontier had heavy fatigue duty in clearing jungle, making roads, and building huts. The marches were not long, but became very fatiguing after rain on account of the heavy nature of the ground. There were three nights in bed for the Duffla Expedition, and 7·5 for the rest of the regiment. The duty for the rest of the year was not severe, except during the visit of the Prince of Wales to Calcutta, during which the guards were exceedingly numerous; but this only lasted for a short time. Embarking and disembarking stores and magazine on the march from Jalpaiguri, when at Caragola and Sahibgunge, was also severe work.

Exercise, &c.

XII. Exercise, &c.—Exercise, amusements and occupations, as in previous reports. The men do not seem to take great interest in any amusement or recreation, although there are many expert swimmers, wrestlers, runners, and Indian-club players amongst them, and their performances in these exercises at the annual regimental games given to celebrate the relief of Lucknow, are highly creditable. As the regiment has been so frequently moved during the last two years, they have had no inducement to commence gardening operations.

Service.

XIII. Service.—The head-quarters remained at Tezpur from the 1st January until the 22nd March, on which date they started for Dhubri in the steamer *Prince Albert* and flat *Konai*, arriving at Gauhâti on the 23rd; starting from that place on the 24th, they arrived at Dhubri on the evening of the 25th, and halted there in camp on the 26th. From this, they started to march to Jalpaiguri on the 27th, on which day they reached Kagrabari; on the 28th, Agamuni; 29th, Karbari Hat; 30th, Tufangunge; 31st, Kuch Behar; on the 1st April, Kotimari; 2nd, Martabhanga; 3rd, Patgram; 4th, Chingrabunder; 5th, reached camping ground on the left bank of the Teesta opposite to Jalpaiguri, and on the 6th April, crossed the river and marched to Jalpaiguri.

The head-quarters and right half battalion remained at Jalpaiguri until the 1st December, when they marched *en route* to Calcutta; on that day to Bhauganpore; 2nd, to Titalyah; 3rd, to Chopra; 4th, to Ulwapara; 5th, Gaisal; 6th, to Kissengunge; 7th, to Asuragurh; 8th, to Dengra Ghat; 9th, to Lal Baloo; 10th, to Purneah; 11th, Chitreeapore; 12th, to Luchmipore; 13th, to Caragola. The landing place is about 5 miles distant, and was reached on the 14th, when the half battalion embarked in a steamer and two flats, and crossed the Ganges to Sahibgunge, arriving there about night-fall. The whole of the next day was spent in unloading luggage from the ship and flats, and loading up the train. The same evening they left Sahibgunge and proceeded by train to Calcutta, arriving at Howrah Station on the morning of the 16th. From Howrah they marched to the Calcutta maidan, where the left half battalion was already encamped. The whole regiment was encamped on the maidan until the end of the year.

Sickness, mortality and invaliding.

XV. Sickness, mortality and invaliding.—Strength of the regiment—

Present	...	...	...	...	...	603·08
Absent	...	...	...	...	...	83·71
					Total ...	686·79

Station.	Period		Strength.	Total Number of		Daily average number of sick.	Per cent. of strength per annum.		
	From	To.		Admissions.	Deaths.		Admissions.	Deaths.	Daily average sick.
Head-quarters at Tezpur, Jalpaiguri and Calcutta.	1st January ...	31st December	326·32	863	5	21·64	264·46	1·53	6·63
Wing at Dacca ...	Ditto ...	16th Ditto ...	246·54	221	2	8·07	93·48	·84	3·27
Detachment at Duffla Expedition,	Ditto ...	1st March ...	203·12	73	1	16·64	218·57	2·99	8·20
Detachment at Jalpaiguri...	Ditto ...	6th April ...	19·00	...	...	...	...	...	...
Total ...	...	...	603·08	1,157	8	52·28	191·87	1·32	5·35

Number of deaths in hospital, 8; out of hospital, 10; total, 18; per cent. of total strength				...	2·62
„ invalided	...	...	... 40;	„ „	... 5·82
„ sent on sick leave	...	...	... 30;	„ „	... 4·36
„ of days spent in hospital, 12,699; per admission,... 10·97; per man				„	... 18·49
„ „ on sick leave, 4,290; per man, ... 143 ;				„ „	... 6·24
Total temporary loss of service per man of total strength					... 24·73

Digitized by Google

The left half battalion left Dacca on the 8th December, proceeded by steamer to Goalundo, arrived there on the 10th, started by train on the 11th from Goalundo, and arrived in Calcutta on the 12th December, when they went into camp on the maidan.

XVI. Principal causes of sickness.—In the right half battalion, fevers have, as during the last two years, caused by far the largest number of admissions, being between six and seven times as numerous as diarrhœa, the next great cause of admissions. The total admissions for the year are less than last year's by 57 cases. The fever is amply accounted for by the stations in which the regiment has been quartered, both Assam and Jalpaiguri being malarious. The number of admissions for fever is, however, less than that of last year by 41, or 442 to 483 for 1874. Principal causes of sickness.

Bowel complaints, the next important class of disease, also show a falling off of 92 cases, or 171 to 282 last year. These diseases are probably partly due to climate and partly to food. The inhabitants of Assam and Jalpaiguri do not live on atta, and they say that eating it causes dyspepsia and diarrhœa; this is, of course, partly due to its being food to which they are unaccustomed; but even up-country men often change their food in these places, eating more rice and less atta. It has also been shown that the men sometimes had a difficulty in getting extra articles of diet. A large number of itch cases were admitted, 28 in 1875 against 8 in 1874. This is probably not attributable to the men being less cleanly, but to their having lived a good deal in tents and barracks, where they all slept on the same ground or on the same machans, instead of on separate charpoys, and thus communicated the disease in this way. Goitre shows a slight increase: 12 cases against 10 last year. In the left half battalion the principal causes of sickness were: fevers, 53 cases; dysentery, 18 cases; diarrhœa 20 cases; and dyspepsia, 34 cases. Bowel complaints. Itch.

Two suspected cases of snake-bite were admitted, but were not followed by any bad symptoms: they both occurred at night. Snake-bite.

XVII. Principal causes of mortality. During the year, five cases died in the regimental hospital at head-quarters. This was an increase of three on the previous year; but as two were due to cholera, and one to suicidal poisoning, there are only two left for ordinary causes, and these were both due to fevers. There were two deaths in the left half battalion hospital at Dacca, and one at the Duffla Expedition, from dysentery. Mortality.

XXI. Special observations—The most noticeable feature in the return is the large number of fever cases treated, although the mortality from them in hospital has been small; the total number of deaths has, however, increased, and this may be partly due to the generally depressing influence of malarious diseases. Goitre cases have been common; several were treated successfully by the inhalation of iodine vapour from a perforated pill-box suspended round the neck. There is a falling off in the number of admissions and in the temporary loss of service, but deaths have increased. Special observations.

In the left half battalion, the admissions for the year 1874 exceeded those up to the 16th of December 1875 by 44 cases; the same tendency to diseases of the digestive organs, as contrasted with fevers in the right half battalion, is observed in both years. In 1874 there were 58 admissions for malarious fevers, and 92 admissions for diseases of digestive organs. During the 11½ months of 1875 in which the right half battalion was separate, there were 58 admissions for fevers, against 74 for diseases of the digestive organs. The whole regiment appears to be in fairly good health; but there is no doubt a tendency to fever and anæmia in the right half battalion, and to dyspepsia in the left.

Dr. Irving, Deputy Surgeon-General of the Dinapore circle, inspected the head-quarters and right wing of this regiment at Jalpaiguri on the 25th October 1875. He reports that "the men live in long mat barracks, and sleep on a long row of wooden 'machans'; they seemed to be cramped for room." Inspection.

Dr. Irving considered many of the men to be below the mark in health and physique, and he was told that there were several men in the lines who had frequent attacks of fever, but who kept at their duty. The sepoys have great belief in the use of milk as being conducive to health in the climate of Jalpaiguri, and nearly all of them have cows, or a share in a cow, for which there is ample free pasturage about the lines. Physique.

The hospital is a long mat building raised on piles, and it stands on an open plain close to the river Teesta, and has an enclosed verandah on either side. There were 3 cases of scurvy in hospital, and several others had been treated. The supply of medicines and instruments were ample and were all in good condition. Hospital. Scurvy.

Deputy Surgeon-General J. C. Bow, M. D., inspected the left wing of this regiment at Dacca on the 8th November 1875. He considers the two sleeping rooms occupied by the sepoys to be greatly superior to the accommodation which usually falls to the lot of the native soldier. A very large and elaborate latrine, with a store-room and an oven Left wing.

Digitized by Google

for drying earth, has been for some time in use, but was used only by the native officers and a few of the men.

The medicines, &c., in hospital were in good condition. Dr. Bow examined the men who were present in the lines, and reports that many of them were healthy-looking, but some had ulcerated and discoloured gums.

38th Regiment Native Infantry—Baxa.

Medical Officer.

I. Medical Officer.—This report has been written by Surgeon W. M. Courtney, who held medical charge of the regiment throughout the year.

Location and movements.

Year.	Station.	Per cent. of Strength.		
		Admissions.	Deaths.	Daily sick.
1870 ...	Fyzabad, November 1868	85·8	1·4	2·3
1871 ..	Ditto ditto ...	44·4	1·	2·3
1872 ...	Ditto ditto ...	121·9	1·6	2·9
1873 ...	Baxa, March 1873 ...	137·3	7·1	7·5
1874 ...	Ditto ditto ...	150·7	3·7	10·6
	Average	108·	2·9	5·1
1875 ...	Baxa and on the march	136·96	1·64	5·44

II. Location and movements.—The regiment was stationed at Baxa Dooar from 1st January to 24th November 1875. On the latter date it marched for Barrackpore *viâ* Cooch Behar, Jalpaiguri, Titalyah, Purneah and Calcutta; at the latter place it was encamped on the maidan from 23rd December during the visit of the Prince of Wales.

Meteorology.

IV. Meteorology.—The temperature and rainfall are given in the following table:—

	Highest in month.	Lowest.	Mean of all highest.	Mean of all lowest.	Mean daily range.	Approximate mean for month.	Rain.		Wind.
							Number of days it fell.	Amount.	Direction.
								inches.	
Baxa Dooar, 1875 ...	90·5	47	76·33	67·23	9·24	71·96	133	154	West by day and north by night.
Ditto, 1874 ...	85·	46	72·	66·	6·1	69·	173	238	

The highest temperature recorded was 90·5° in September, and the lowest 47° in January. The greatest monthly range was in December, when it amounted to 26°. The rainfall was less than in the preceding year, being only 154 inches, as compared with 238 inches in 1874. The season 1875 was a hot one, which might be attributed to the diminution of the rainfall. A further residence of a year at Baxa tends to confirm the favourable impression of the climate as regards the health of Europeans; but with respect to Natives, the same cannot be said. At no period of the year was it necessary to use punkahs, nor were mosquitoes troublesome.

Lines and barracks.

V. Lines and Barracks.—No change since previous year; many of the huts and barracks required extensive repairs. Each barrack is 86 × 20 feet, affording 68 superficial feet and 653 cubic feet per man. The huts and barracks in the fort are wretched hovels, and should be pulled down and rebuilt; those in the pickets are in good condition.

Drainage.

VI. Drainage.—The drainage, which is natural and good, has been described in previous reports.

Conservancy and latrines.

VII. Conservancy and Latrines.—The filth is collected by station sweepers, and is carried outside and below cantonments. All the men resort to the jungle for purposes of nature.

Water-supply.

VIII. Water-supply.—The same as in 1874. The water is obtained from springs outside the fort; it is clear and good, but causes goitre. The number of springs vary according to the season of the year: there are generally six. Owing to the nature of the soil, and the natural position of the springs, the water is always in a pure state. There were 43 cases of goitre.

Diet.

IX. Diet.—The same as in 1874. The men sometimes complained of the sameness of the diet, and an endeavour was made to remedy it by issuing rice instead of atta or maida whenever the men preferred the change. The supply of vegetables was scanty, as is usually the case at Baxa, and this was the cause of several cases of scurvy. Milk was also difficult to obtain.

Clothing.

X. Clothing.—Reported last year. In many cases where recruits were admitted to hospital, their supply of bedding and clothing was found inadequate, and application was made to the regimental authorities to repair the deficiency.

Boots.

The boots are the ordinary ammunition pattern supplied to the Native Army. There were 41 cases of blistered feet, but most of these occurred during the march from Baxa.

Digitized by Google

XI. Duties.—The duties were not excessive, the number of nights in bed being 5·93. Duties.

XII. Exercise and Amusements.—With the exception of the ordinary duties, the sepoys did not take much exercise. In the *akhárá* or native gymnasium, many of the men practised wrestling, the use of the clubs, single stick, &c. Situated as it is, Baxa does not offer many inducements to the sepoy for out-door exercise. Foot races, athletic games and foot-ball were occasionally got up by the European officers for the benefit of the men. Exercise and amusements.

XIII. Marches.—The regiment marched from Baxa on the afternoon of November 24th, and arrived at Calcutta on December 23rd, where it was detained for duty until the end of the year. During the march there were a great many cases of ague, dysentery and diarrhœa, all of which might be attributed to the damp night air to which the men were exposed, as well as to the drinking water, which was not always of the purest quality. Marches.

XIV. Hospital.—Previously described. 100 feet long by 24½ feet wide; accommodates 40 men, but is altogether insufficient for the wants of the regiment. An additional hospital for 40 men should be constructed. A new bath-room is now attached to the hospital, but it does not appear to be popular with the men. Hospital.

XV. Sickness, mortality and invaliding.—Strength of the regiment— Sickness, mortality and invaliding.

Present	...	...	...	...	... 582·78
Absent	...	...	...	...	... 84·34
				Total	... 667

Station.	Period		Strength.	Total No. of		Daily average number of sick.	Per cent. of Strength.		
	From	To		Admissions.	Deaths		Admissions.	Deaths	Daily average sick.
Baxa Dooar	1st Jany. 1875	31st Dec. 1875	582·78	798	7	31·71	136·9	1·2	5·44

Number of deaths in hospital, 7; out of hospital, 4; total 11; per cent. of total strength			...	1·64
„ invalided	... ...	... 47; „	„	... 7·04
„ sent on sick leave	... ..	... 35; „	„	.. 5·24
„ of days spent in hospital, 11,014; per admission, 13·8; per man			„	... 16·51
„ „ on sick leave, 3,261; per man, 93·17;			„	... 4·88
Total temporary loss of service per man				... 21·39

XVI. Principal causes of sickness.—The principal causes of sickness are given in the following table, and are compared with the previous year:— Principal causes of sickness.

	Ague.	Dysentery.	Wound of lower extremity.	Diarrhœa.	Goitre.	Blister of feet.	Debility.	Fly bite.	Abscess.	Contusion of lower extremity.	Herpes.	Hemeralopia.	Dyspepsia.	Conjunctivitis.	Bronchitis.	Pleurisy.	Brow ague.	Scurvy.	Other diseases.	Total.
	158	466	1117	481	290	118	905	900	819	1115	841	163	460	111	306a	331	101b	54		
1875 ...	220	116	83	45	43	41	37	35	26	15	14	11	10	10	9	6	6	4	100	831
1874 ...	251	55	46	35	52	18	53	71	18	16	2	...	4	10	8	8	2	15	241	905

The prevalence of ague may be attributed to the proximity of the terai, and to the sudden alternation of temperature. The large number of cases of dysentery and diarrhœa might be attributed to the same causes, as well as to a deficiency in the diet of the sepoy. Goitre, blisters of the feet, fly-bite and scurvy have been less than in the previous year. For the prevention of goitre, instructions were given to the men regarding the water for drinking; but in no case do they appear to have been carried out. The diminution in the number of cases of scurvy was due in a great measure to a supply of lime juice having been served out every day, and an endeavour to induce the men to eat vegetables when they could be procured. The majority of cases of debility were those of men above 15 years' service, candidates for the pension lists. Two men who had completed their service for pension, but who were in every way fit for further duty, were convicted of malingering, and dismissed the service by sentence of court-martial. One of them feigned complete blindness of the right eye, and was sent before the invaliding committee, but did not pass; the other complained of impaired vision, and was a long time under treatment before the deception was detected. Many of this regiment consist of the Bhagat class, men who, by a religious vow, abstain from meat and other articles of diet. When such men come to hospital, they rapidly succumb to disease; and on active service they would be an encumbrance to a regiment. Their physique is generally bad; and it might be in the interest of the State to limit the number of such men as recruits for the Native army. The Aheer is another caste that do not turn out good soldiers. Since the Malingering.

Digitized by Google

new rules for recruiting the Native army have been published, it is probable that men of the classes referred to will form a very small proportion of a regiment.

The regiment consists of—

Rajpoots ... 294			
Sikhs ... 3	Total Hindoos		643
Goorkhas ... 89			
Other Hindoos ... 257			
Mussulmans ...	... ...		17
Native Christians...	... ...		13
		TOTAL ...	673

Principal causes of mortality.

XVII. Principal causes of mortality.—The principal causes of mortality are here given :—

	Ague.	Diarrhœa.	Debility.	Splenitis.	Total.
	15s	434	905	524	
Died in hospital	2	3	1	1	7
„ out of hospital	3	1	...	...	4
TOTAL ...	5	4	1	1	11

Two of the deaths out of hospital occurred in 1874, but the report was not received until 1875. Of the deaths in hospital, one of the cases of ague was complicated with congestion of the brain, and the other with double pneumonia. The cases of splenitis and debility ended fatally from diarrhœa.

Epidemics.

XVIII. Epidemics.—There was one case of cholera in the person of a Goorkha recruit who recovered. There were no epidemics in the station during the year, but in the villages about 25 miles south of Baxa cholera was said to be rife.

Vaccination.

XIX. Vaccination.—Twenty-nine men were vaccinated, seventeen of them successfully. Most of the sepoys are protected by previous attacks of small-pox, or by inoculation. Fifty-three camp followers were vaccinated, twenty-three of them successfully. Vaccination was also carried on among the Bhooteas residing at Baxa, many of whom came voluntarily to hospital to undergo the operation.

Recommendations.

XX. Recommendations.—All the recommendations made during the year were of minor importance, but were fully carried out by the regimental authorities. The recommendation made in previous years, that a ration of meat or milk should be supplied to the sick in hospital, has not been carried out, the Government not having approved of it. In comparing the present report with that of last year, the result is very satisfactory. In 1873, the sickness of the regiment was so excessive as to call for special report; since which time, it has been improving in health, and will now bear favourable comparison with many of the Bengal Infantry Regiments.

Digitized by Google

Statistics of the Native Army.

Table No. I.

Statement showing the SICKNESS, MORTALITY and INVALIDING of the NATVIE ARMY of Bengal for the year 1875.

N. B.—Regiments are placed as they stood in the Army List on the 1st of July 1875.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
DIVISION.	REGIMENT.	STATION.	MOVEMENTS IN THE YEAR.	Average daily strength present during the year.	Average daily sick.	Remained.	Admitted.	Total treated.	DEATHS. Present. In Hospital.	DEATHS. Present. Out of Hospital.	Average daily sick per cent. to the average strength present.	Ratio per cent. of admissions to the average strength.	RATIO OF DEATHS PER CENT. In hospital to treated.	RATIO OF DEATHS PER CENT. Present to average strength present.	RATIO OF DEATHS PER CENT. Of total deaths—cols. 10 & 11—to average strength present and absent.	INVALIDED. For discharge from the service.	INVALIDED. For change of climate.	HINDOOS. Strength on the 31st December 1875.	HINDOOS. Died during the year.	MUSSULMANS. Strength on the 31st December 1875.	MUSSULMANS. Died during the year.	CHRISTIANS. Strength on the 31st December 1875.	CHRISTIANS. Died during the year.	Strength borne on the rolls of the regiment on the 31st December 1875.	REGIMENT.	Average number of continuous nights in bed.	REMARKS.
PRESIDENCY DISTRICT.	4th Regiment, N. I., Head-Quarters and Left Wing.	Bhagalpore...	*Nil*	439·15	13·2	11	399	410	1	...	..	3·06	90·87	·24	·23	·20	21	8	553	2	153	1	7	...	712	4th Regt. N. I., Right Wing.	4·3	Wing at Nya Doomka, from 2nd April to 7th December; and Left Wing, from 7th to 31st December; Detachment at Bankipore, from 20th to 31st December.
	4th Regiment, N. I., Right Wing.	Nya Doomka	*Nil*	262·4	19·8	...	280	280	1	...	1	4·11	106·76	·35	·38	·76										4th Regt., N. I., Left Wing.		
	10th Regiment, N. I.	Barrackpore..	*Nil*	608·8	81·2	66	1,406	1,472	33	...	11	13·33	230·94	2·24	5·42	6·44	22	57	479	32	165	10	20	2	664	10th N. I. ...	3·0	110 men at Dum-Dum throughout the year.
	28th Regiment, N. I.	Alipore ...	Took part in the Camp of Exercise, Delhi.	607·9	32·5	55	892	947	11	...	11*	5·34	146·89	1·16	1·80	3·18	18	23	368	13	347	9	...	...	715	28th N. I. ...	4·5	Quartered at Alipore till 4th November, when it proceeded by rail to Cawnpore; thence marched to Delhi, and remained in camp till 31st December. Two Detachments at Shahjahanpore and Moradabad.
	37th Regiment, N. I.	Fort William	*Nil*	606·3	34·5	46	638	684	9	...	4	5·68	105·14	1·31	1·48	1·89	9	13	595	11	98	2	4	...	697	37th N. I. ...	3·5	
	39th Regiment, N. I., Right Wing.	Barrackpore..	1st January to 19th December at Barrackpore, and from 20th to 31st December at the maidan, Calcutta.	379·6	23·1	34	442	476	9	1	5	5·81	116·43	1·89	2·63	3·20	40	31	629	18	61	2	9	...	699	39th N. I., Right Wing.	2·9	Wing at Alipore throughout the year.
	39th Regiment, N. I., Left Wing.	Alipore ...	*Nil*	217·4	14·2	14	397	411	3	...	2	6·53	182·61	·73	1·38	1·44										39th N. I., Left Wing.	3·2	
	TOTALS AND AVERAGES OF THE PRESIDENCY DISTRICT ...			3122·	208·5	226	4,454	4,680	67	1	34	6·68	142·69	1·43	2·18	2·91	110	132	2,623	76	824	24	40	2	3,487	.....	...	
EASTERN FRONTIER DISTRICT.	3rd Regiment N. I. ...	Cachar ...	*Nil*	640·8	20·9	18	827	845	10	2	6	3·26	129·05	1·18	1·87	2·56	4	4	481	13	217	5	5	...	703	3rd N. I. ...	13·8	Detachment at Manipur (41), Munierkhall (51), and Noarbund (31), throughout the year. Chargola (41) and Alinagar (41) from 1st January to 20th March.
	16th Regiment, N. I.	Jalpaiguri ...	From 1st to 22nd March at Texpore; at Jalpaiguri, till 1st December, when it marched to Calcutta, and remained there till the end of the year	603·	32·2	57	1,157	1,214	8	...	10	5·33	191·87	·65	1·32	2·61	40	30	594	16	105	2	11	...	710	16th N. I. ...	5·5	Detachment at Duffla expedition, from 1st January to 1st March; strength 203. Detachment Jalpaiguri from 1st January to 6th April. L. H. B. at Dacca from 1st January to 8th December.
	38th Regiment, N. I.	Baxa ...	At Baxa from 1st January to 24th November, on which date it marched for Barrackpore.	582·7	31·7	33	798	831	7	...	4*	5·44	136·96	·84	1·20	1·64	47	35	643	11	17	...	13	...	673	38th N. I. ...	6·3	Nil.
	42nd Regiment, N. I.	Gauhati ...	Took part in the Duffla Campaign and Naga Expedition.	783·	35·	47	1,125	1,172	14	1	7*	4·46	143·67	1·19	1·91	2·57	33	18	695	21	127	1	...	...	822	42nd N. I. ...	6·	Depôt at Gauhati from 1st January to 16th April. Detachments at Texpore and Nowgong throughout the year.

* One of these diod in 1874, but was not struck off the rolls till 1875.

Digitized by Google

1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
DIVISION.	REGIMENT.	STATION.	MOVEMENTS IN THE YEAR.	Average daily strength present during the year.	Average daily sick.	Remained.	Admitted.	Total treated.	DEATHS. Present. In Hospital.	DEATHS. Present. Out of Hospital.	Absent.	Average daily sick per cent. to the average strength present.	Ratio per cent. of admissions to the average strength.	RATIO OF DEATHS PER CENT. In Hospital to treated.	RATIO OF DEATHS PER CENT. Present to average strength present.	RATIO OF DEATHS PER CENT. Of total deaths—cols. 10 & 11—to average strength present and absent.	INVALIDED. For discharge from the service.	INVALIDED. For change of climate.	HINDOOS. Strength on the 31st December 1875.	HINDOOS. Died during the year.	MUSSULMANS. Strength on the 31st December 1875.	MUSSULMANS. Died during the year.	CHRISTIANS. Strength on the 31st December 1875.	CHRISTIANS. Died during the year.	Strength borne on the rolls of the Regiment on the 31st December 1875.	REGIMENT.	Average number of continuous nights in bed.	REMARKS.
EASTERN FRONTIER DISTRICT—*concld*	43rd Regiment, N. I.	Shillong ...	Took part in the Duffla Expedition.	826·6	43·9	45	1,111	1,159	11	...	3	5·31	134·77	·95	1·33	1·57	8	3	861	13	39	1	...	...	900	43rd N. I. ...	4·9	Detachment at Jowai throughout the year. Detachment with Duffla Expedition from 1st January to 28th March (196).
	44th Regiment, N. I.	Dibrugarh ...	*Nil*	812·9	41·6	17	1,623	1,640	7	2	17	5·12	199·65	·43	1·17	2·95	21	13	832	26	20	...	7	...	859	44th N. I. ...	5·5	Detachment at Gohpur, Alinagar, and Chargola, Depôt at Shillong from 1st January to 10th February. Detachments at Sadiya and Golaghat from 1st January to 31st December. Detachments at Jaipur from 1st January to 27th August, and with the Naga and Duffla Field Force.
	TOTALS AND AVERAGES OF THE EASTERN FRONTIER DISTRICT ..			4249·	205·3	217	6,644	6,861	57	5	47	4·83	156·37	·83	1·46	2·33	152	102	4,106	100	525	9	36	...	4,667	.....	...	
ALLAHABAD DIVISION.	1st Bengal Cavalry ...	Cawnpore ...	From the 19th November 1875, in course of general relief to Sialkot.	359·7	6·9	6	186	192	1	...	3	1·92	51·71	·52	·28	·83	6	4	12	...	445	4	...	...	457	1st B. C. ...	12·4	*Nil.*
	2nd Bengal Cavalry...	Segowlie ...	Arrived at Segowlie on 9th February from Fyzabad.	413·1	10·5	3	266	269	...	...	1	2·54	64·39	...	...	·22	16	5	229	1	230	...	...	...	459	2nd B. C. ...	8·	Detachments at Sezowlie (134) Gorokhpur (50), Benares (16), Dinapore (14), and Barrackpore (137).
	18th Bengal Cavalry...	Allahabad ...	*Nil*	379·4	11·5	13	313	326	1	...	...	3·03	82·49	·30	·26	·22	13	4	170	...	286	1	1	...	457	18th B. C. ...	7·6	Detachments at Barrackpore, Benares, Dinapore and Calcutta.
	2nd Native Infantry...	Dinapore ...	Stationed at Dinapore from 1st January to 16th December. On the line of march to Fyzabad from 16th to 31st December 1875.	630·6	18·3	21	406	427	1	...	1	2·90	64·38	·23	·15	·28	14	7	579	1	110	1	16	...	705	2nd N. I. ..	9·	Detachment at Fyzabad (235), from 29th October to 31st December.
	13th Native Infantry	Benares ...	*Nil*	639·6	34·2	37	660	697	6	...	5	5·34	103·18	·86	·93	1·56	32	15	609	10	99	1	..	...	708	13th N. I. ..	5·9	Detachments at Chunar (70) and Berhampore (169) throughout the year.
	34th Native Infantry	Allahabad ...	*Nil*	641·6	15·5	21	526	547	3	...	1	2·41	81·98	·54	·46	·65	38	18	626	4	81	..	4	...	711	34th N. I. ..	6·	*Nil.*
	35th Native Infantry	Cawnpore ...	From 1st January to 14th December at Cawnpore. From 17th to 31st December at camp Calcutta.	630·9	10·9	12	268	280	3	...	3	1·72	42 47	1·07	·47	·84	37	3	684	6	18	...	9	...	711	35th N. I. ..	15·2	*Nil.*
	TOTALS AND AVERAGES OF THE ALLAHABAD DIVISION ...			3,694·9	107·8	113	2,625	2,738	15	...	14	2·92	71·04	·55	·41	·69	156	56	2,909	22	1,269	7	30	...	4,208	.....	...	
GWALIOR DISTRICT.	6th Bengal Cavalry	Morar ...	*Nil*	365 3	11 4	9	483	492	...	...	4	3·12	132·22	...	...	·87	19	10	195	1	259	3	...	...	454	6th B. C. ...	6·	Detachment 25 strong at Sipri throughout the year.
	9th Native Infantry...	Ditto ...	*Nil*	619·5	29·8	49	744	793	2	1	3	4·81	120·01	·25	·48	·85	15	29	602	5	98	1	4	...	704	9th N. I. ...	6·4	Two treasure escorts, consisting of 94 and 72 men, marched to Dholepore and back in July and October.
	17th Native Infantry	Ditto ...	On the line of march between Meean Meer and Morar from 1st to 22nd January inclusive, arriving at Morar on 23rd January.	614·6	19·1	35	580	615	18	...	3	3·10	94 37	2·92	2·92	3·05	4	18	541	20	142	1	14	...	697	17th N. I. ...	6·2	*Nil.*
	24th Native Infantry	Jhansi ...	.....	613·4	23·2	25	749	774	1	2	3	3·78	122·11	·13	·48	·86	15	4	412	6	286	...	...	..	698	24th N. I. ...	10·4	Detachments at Lalitpur (73) and Sipri (26) throughout the year.
	TOTALS AND AVERAGES OF THE GWALIOR DISTRICT ...			2,212·8	93·5	118	2,550	2,674	21	3	13	3·77	115·51	·78	1·08	1·45	53	61	1,750	32	785	5	18	...	2,553	.....	...	

Digitized by Google

Saugor District.	3rd Bengal Cavalry...	Nowgong ...	From 1st January to 22nd December at Nowgong, on which date it marched towards Lucknow.	371·6	13·7	13	445	458	1	...	...	3·42	119·75	22	·27	·22	17	2	236	1	220	..	1	...	457	3rd B. C. ...	11·3	A detachment of 87 strong stationed at Nowgong until 21st December, on which date it marched towards Lucknow.
Central India.	1st Central India Horse.	Goonah ...	From 1st January to 31st October at Goonah. Took part in the Camp of Exercise, Delhi.	323·1	8·2	4	260	264	...	...	1	2·53	80·47	...	...	·20	14	3	295	...	198	1	...	...	493	1st C. I. Horse ..	3·	A detachment at Sehore throughout the year. In addition to the above, guards were furnished to various places in the district.
	2nd Central India Horse.	Augur ...	*Nil*	263·8	5·1	3	108	111	1	...	5	1·93	40·94	·90	·37	1·21	26	3	313	5	174	1	6	...	493	2nd C. I. Horse...	3·7	A detachment, strength 22, was stationed throughout the year at Indore. A squadron (112·69) proceeded with the 1st C. I. Horse to Delhi. Guards were furnished to various places in the district.
	Bhopal Battalion ...	Sehore ...	*Nil*	799·7	11·1	9	488	497	15	1	2	1·38	61·02	3·01	2·	1·92	4	3	830	16	110	2	...	...	940	Bhopal Battalion	5 3	A detachment at Indore (55) throughout the year. A detachment of 68 men accompanied the Agent, Governor General for Central India from 1st January to 5th March.
	Meywar Bheel Corps	Kherwarrah	*Nil*	457·7	10·3	13	401	414	4	1	2	2·24	87·61	·96	1·09	·99	5	1	682	7	25	...	...	..	707	Meywar Bheel Corps ...	2·	Detachments at Kotra and Oodipore.
	Malwa Bheel Corps..	Sirdarpore ...	*Nil*	405	13·2	10	486	496	3	...	1	3·26	120·	·60	·74	·67	9	4	582	4	14	...	...	...	596	Malwa Bheel Corps ...	2·5	Small detachments at several outposts.
	Mhairwara Battalion	Ajmere ...	*Nil*	618	29·6	45	763	808	3	...	1	4·79	123·46	·37	·48	·56	28	22	462	1	249	3	...	...	711	Mhairwara Battalion.	2·	Detachments at Sumbhur and Beawur.
	TOTALS AND AVERAGES OF THE TROOPS IN CENTRAL INDIA ...			2867·3	77·5	84	2,506	2,590	26	2	12	2·70	87·39	1·	·97	1·02	86	36	3,164	33	770	7	6		3,940	...	...	
Rajpootana.	9th Bengal Cavalry ...	Deolee ...	*Nil* ...	374·	19·1	24	388	412	6	1	1	5·10	103·72	1·45	1·89	1·79	23	13	248	5	200	3	...	...	448	9th B. C. ..	4·5	Detachment at Jhansi and Sumbhur, from 1st January to 31st December.
	Deolee Irregular Force	Deolee ...	*Nil* ...	683·	30·8	34	803	837	3	...	2	4·51	117·57	·36	·44	·57	...	5	800	5	76	...	...	...	876	Deolee I. Force...	3	Detachments at Jeypore, Bhurtpore, Bikaneer, and Kota. Detachment with the camp, Agent Governor General, from 1st January to 9th March; detachment at Agra, with the camp, Agent Governor General, from the 12th December.
	Erinpoorah Irregular Force.	Erinpoorah ..	*Nil* ...	716·9	19·1	30	616	646	6	1	3	2·66	85·92	·93	·98	1·25	1	...	822	10	54	...	...	...	876	Erinpoorah I. F.	4·	Detachment at Aboo (72) throughout the year, Joudhpore (61), and escort Agent Governor General's camp (98).
	TOTALS AND AVERAGES OF THE TROOPS IN RAJPOOTANA ...			1773·9	69·	88	1,807	1,895	15	2	6	3·89	101·86	·79	·91	1·05	23	18	1,870	20	330	3	...	...	2,200	...	.....	
Oudh Division.	7th Bengal Cavalry ...	Sitapur ...	*Nil* ...	381·6	10·2	11	262	273	3	...	3	2·67	68·65	1·09	·78	·13	16	7	233	2	217	4	3	...	453	7th B. C. ...	9·	One squadron at Fyzabad, from 16th January to 12th October. Detachment of 87 men at Morar from 13th November to 31st December.
	19th Bengal Cavalry	Lucknow ...	*Nil* ...	398·8	15·	17	418	435	3	...	1	3·76	104·81	·68	·75	·87	11	2	265	3	192	1	...	...	457	19th B. C. ...	4·7	Detachment (140) at Barrackpore till 8th November, furnishing a small detachment of 40 men to Alipore.
	1st Native Infantry...	Gorakhpur...	*Nil* ...	336·5	35·5	16	1,156	1,172	1	...	2	5·58	181·76	·01	·15	·42	19	7	504	3	177	...	14	...	695	1st N. I. ...	8·	*Nil.*
	6th Native Infantry...	Lucknow ...	*Nil* ...	581·5	19·	11	643	654	5	...	2	3·26	110·57	·76	·85	1·05	10	7	498	7	187	...	5	...	690	6th N. I. ...	6·	*Nil.*
	8th Native Infantry...	Fyzabad ...	At Fyzabad from 1st January to 25th October. Took part in the Camp of Exercise.	638·6	17·8	18	773	791	3	...	3	2·78	121·01	·37	·46	·85	9	13	476	5	228	1	1	...	705	8th N. I. ...	10·4	Detachment at Agra (170) from 16th November to 31st December.
	41st Native Infantry	Lucknow ...	*Nil* ...	622·1	26·9	40	491	531	2	...	4	4·32	78·92	·37	·32	·86	34	9	603	6	89	...	7	...	699	41st N. I. ...	7·7	Detachment of 110 men on duty at Fort Mucheebhawun every alternate week.
	TOTALS AND AVERAGES OF THE OUDH DIVISION ...			3239·3	124·4	113	3,743	3,856	17	...	15	3·82	114·86	·44	·52	·87	99	45	2,579	26	1,090	6	30		3,699	...	.....	

Digitized by Google

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
DIVISION.	REGIMENT.	STATION.	MOVEMENTS IN THE YEAR.	Average daily strength present during the year.	Average daily sick.	Remained.	Admitted.	Total treated.	DEATHS. Present. In Hospital.	DEATHS. Present. Out of Hospita.	DEATHS. Absent.	Average daily sick per cent. to the average strength present.	Ratio per cent. of admissions to the average strength.	RATIO OF DEATHS PER CENT. In Hospital to treated.	RATIO OF DEATHS PER CENT. Present to average strength present.	RATIO OF DEATHS PER CENT. Of total deaths—cols. 10 to 11—to average strength present and absent.	INVALIDED For discharge from the service	INVALIDED For change of climate.	HINDOOS. Strength on the 31st December 1874.	HINDOOS. Died during the year.	MUSSULMANS. Strength on the 31st December 1875.	MUSSULMANS. Died during the year.	CHRISTIANS. Strength on the 31st December 1875.	CHRISTIANS. Died during the year.	Strength borne on the rolls of the regiment on the 31st December 1875.	REGIMENT.	Average number of continuous nights in bed.	REMARKS.
MEERUT DIVISION.	4th Bengal Cavalry ...	Meerut ...	At Meerut from 1st January to 3rd March, and from 3rd April to 15th November. Camp Delhi from 3rd March to 3rd April, and again Camp of Exercise from 16th November to 31st December.	412·4	6·4	21	284	305	3	...	2	1·55	68·86	·98	·73	1·10	14	1	201	1	256	4	...	...	457	4th B. C. ...	4·1	Detachments at Delhi (47) and Agra (43).
	Viceroy's Body Guard	Dehra Dun...	Stationed at Ballygunge from 1st January to 7th March; on special duty at Delhi until 29th March, when it left for Dehra Dun.	80·3	4·1	4	219	223	...	...	2	5·10	272·72	...	...	1·94	...	...	48	1	69	1	...	...	117	Viceroy's B. G....	1·	Detachment of 65 men sent to Bombay for duty with the Viceroy on the reception of His Royal Highness the Prince of Wales.
	5th Native Infantry...	Meerut ...	At Meerut from 1st January to 2nd March; marched to the Camp of Exercise on 3rd March and returned to Meerut on 4th April.	633·5	14·9	28	550	578	12	...	2	2·35	86·81	2·07	1·89	2·00	35	14	592	13	95	1	16	...	703	5th N. I. ...	4·3	Detachment (274) has been stationed in Camp at Umballa from 1st November to 31st December.
	18th Native Infantry	Agra ...	At Agra till 20th October; stationed at Baxa from 25th November to 31st December.	621·8	28·6	33	776	809	10	...	4	4·60	124·79	1·25	1·61	1·99	25	13	521	13	179	1	5	...	705	18th N. I. ...	.....	Detachment at Fatehgarh from 1st January to 5th April. Detachment at Ulwar from 2nd March to 22nd October.
	33rd Native Infantry	Delhi ...	At Delhi from 1st January to 6th December when it marched to the Camp of Exercise.	631·5	26·7	25	903	928	4	...	1	4·22	142·99	·43	·63	·71	29	18	559	4	139	1	9	...	707	33rd N. I. ...	8·	Detachment (190) at Delhi from 7th to 31st December.
	36th Native Infantry	Agra ...	*Nil* ...	617·7	20·9	38	299	337	8	...	1	3·38	48·40	2·37	1·29	1·20	33	16	624 Goorkhas.	9	59	...	10	...	693	36th N. I. ...	.....	Detachment, Fatehgarh (152), from 19th March to 31st December; Ulwar (56) throughout the year.
	2nd Goorkha Regiment.	Dehra Dun...	At Dehra from 1st January to 18th November, when it marched to the Camp of Exercise.	657·5	21·5	22	505	527	18	...	3	3·27	76·80	3·41	2·73	2·96	32	7	691	21	.....	...	...	...	691	2nd Goorkhas ...	9·	Depôt at Dehra Dun from 18th November to 31st December.
	Bengal Sappers and Miners.	Roorkee ...	*Nil* ...	1028·8	27·2	28	1,043	1,071	2	2	·7	2·65	101·38	·18	·38	·96	42	37	716	7	431	4	...	...	1,147	Sappers & Miners	.....	Detachments at Peshawur, Rawal Pindi, Chorat, and a small party of 62 men sent to the Duffla Expedition.
	TOTALS AND AVERAGES OF THE MEERUT DIVISION ...			4683·5	150·3	199	4,579	4,778	57	2	22	3·21	97·77	1·19	1·26	1·56	219	110	3,952	69	1,229	12	40	...	5,220	...	....	
ROHILCUND DISTRICT.	16th Bengal Cavalry	Bareilly ...	*Nil*	417·8	4·5	5	99	104	4	...	2	1·07	23·69	2·84	·95	1·31	12	1	253	5	203	1	1	...	457	16th B. C. ...	...	Detachment of 50 men at Moradabad throughout the year.
	11th Native Infantry	Bareilly ...	At Bareilly from 1st January to 16th November and then took part in the Camp of Exercise, Delhi.	619·6	11·8	6	341	347	4	...	5	1·90	55·03	1·15	·64	1·29	51	7	556	9	149	...	...	...	705	11th N. I. ...	...	Detachment at Bareilly (78) from 17th November to 31st December.
	45th Native Infantry	Moradabad and Shahjahanpur.	R. W. and Head Quarters remained at Moradabad till 25th November. L.W. remained at Shahjahanpur till 12th November. Took part in the Camp of Exercise.	592·5	14·9	15	489	504	2	...	1	2·51	82·53	·39	·33	·42	67	8	598	2	106	1	3	...	707	45th N. I. ...	...	Detachment of 178 men at Alipore from 21st December till the end of the year.
	3rd Goorkha Regt.	Almora ...	At Almora from 1st January to 13th November, when it proceeded to the Camp of Exercise.	634·	28·2	34	647	681	3	...	...	4·44	102·05	·44	·47	·41	37	5	707	3	...	...	...	...	707	3rd Goorkhas.	...	Detachments at Pithoragarh, Naini Tal, and Ranikhet throughout the year.
	TOTALS AND AVERAGES OF THE ROHILCUND DISTRICT ...			2263·9	59·4	60	1,576	1,636	13	...	8	2·62	60·61	·79	·57	·81	167	21	2,114	19	458	2	4	...	2,576	...	...	

Digitized by Google

Sirhind Division.	15th Bengal Cavalry	Umballa ...	At Umballa from 1st January to 19th November. Took part in the Camp of Exercise.	333·3	11·8	9	333	342	...	...	1	3·07	86·86	...	...	·21	7	12	21	...	437	1	...	...	458	15th B. C.	Detachment at Jullundur from 1st January to 10th November, Umballa from 20th November to 13th December, and at Cawnpore from 14th to 31st December.
	7th Native Infantry	Jullundur ...	*Nil*	633·	37·5	32	1,195	1,227	8	...	4	5·92	188·76	·65	1·26	1·70	27	14	569	11	139	1	4	...	712	7th N. I.	Detachments at Ludiana (108) and Phillour (46) throughout the year.
	32nd Native Infantry	Umballa ...	At Umballa from 1st January to 2nd November. Took part at the Camp of Exercise.	617·3	16·7	32	606	638	3	...	4*	2·70	98·16	·47	·48	·98	17	1	649	7	23	...	3	...	675	32nd N. I.	Detachment at Umballa 194 strong, from 3rd November to 31st December.
	TOTALS AND AVERAGES OF THE SIRHIND DIVISION ...			1633·6	66·0	73	2,134	2,207	11	...	9	4·01	130·63	·49	·97	1·07	51	27	1,239	18	599	2	7	...	1,845	... ...	
Lahore Division.	11th Bengal Cavalry	Meean Meer	At Meean Meer from 1st January to 31st October. Took part at the Camp of Exercise.	368·4	15·4	13	591	604	3	...	2	4·18	167·42	·49	·81	1·06	13	9	297	5	160	...	1	...	458	11th D. C.	Detachment of 24 men at Ferozepore throughout the year.
	13th Bengal Cavalry	Mooltan ...	*Nil*	372·1	20·1	27	645	672	5	...	1	5·40	173·0	·74	1·34	1·31	18	8	266	5	188	1	2	...	456	13th B. C.	*Nil.*
	25th Native Infantry	Meean Meer	*Nil*	619·9	22·5	24	1,029	1,053	9	...	3	3·62	165·91	·85	1·29	1·70	13	14	418	5	269	7	7	...	694	25th N. I.	Detachment (174) at Amritsur from 26th February to 31st December.
	26th Native Infantry	Do. ...	Took part at the Camp of Exercise, Delhi.	624·6	32·2	37	8,376	1,413	19	...	4	5·15	220·3	1·33	3·04	3·29	32	47	443	18	258	4	5	1	706	26th N. I.	Detachment at Amritsur from 1st January to 1st March. Detachment at Meean Meer from 3rd November to 31st December.
	31st Native Infantry	Mooltan ...	Marched to the Camp of Exercise on 20th October.	613·8	21·1	14	840	854	10	...	4	3·43	133·85	1·17	1·62	1·97	13	4	421	10	272	4	17	...	710	31st N I.	Detachment 1[illegible]5 strong, marched from Delhi on 7th December, reaching Cawnpore by 1st January 1876.
	40th Native Infantry	Ferozepore...	*Nil*	580·6	36·4	38	1,182	1,220	3[illegible]	...	2	6·27	203·58	·24	·51	·71	39	25	648	4	44	1	11	...	708	40th N. I.	*Nil.*
	1st Goorkha Regt.	Dhurmsalla...	Proceeded to the Perak Expedition on 1st November.	645·5	29·	14	951	965	30	2	1	4·48	147·72	3·10	4·95	4·57	20	2	702	32	1	...	4	1	707	1st Goorkhas	Detachments at Malacca, Surat, Chaitroo, and Depôt at Dhurmsala, from 31st October to 31st December.
	4th Goorkha Regt.	Bakloh ...	Marched to the Camp of Exercise on 20th October.	654·9	26·9	22	782	804	10	...	2	4·10	119·25	1·24	1·52	1·69	46	1	688	12	...	...	...	...	688	4th Goorkhas	Detachment at Simla (120), rejoined Head Quarters on the 16th November at Umballa Depôt at Bakloh from 20th October to 31st December.
	TOTALS AND AVERAGES OF THE LAHORE DIVISION ...			4179·8	203·6	189	7,296	7,585	89	2	19	4·51	167·06	1·17	2·03	2·13	194	110	3,883	91	1,192	17	47	2	5,122	... ...	
Rawal Pindi Division.	5th Bengal Cavalry ...	Jhelum ...	January 1st to 9th February at Rawal Pindi, and from 10th February to 20th October at Jhelum. Marched to the Camp of Exercise on the 21st October.	384·3	9·3	10	489	499	2	1	1	2·42	127·22	·40	·78	·87	12	...	299	3	158	1	1	...	458	5th B. C.	Detachment at Jhelum 1st January to 9th February (73 men). Detachment at Nowgong (76) from 6th to 31st December.
	14th Bengal Cavalry	Rawal Pindi	*Nil*	373·4	9·1	11	287	298	3	...	1	2·44	76·86	1·00	·80	·87	17	3	441	3	14	1	5	...	460	14th B. C.	*Nil.*
	17th Bengal Cavalry	Sialkot ...	*Nil*	367·	25·3	16	650	666	...	...	...	6·89	177·12	...	...	...	20	35	230	...	227	...	...	...	457	17th B. C.	*Nil.*
	14th Native Infantry	Rawal Pindi	Marched to Peshawur on the 10th December.	606·8	16·1	43	387	430	4	...	...	2·65	64·10	·93	·65	·58	7	1	606	3	89	1	...	...	695	14th N. I.	Detachment (136) stationed at Attock from 1st January to 5th March. Detachment at Murree from 17th June to 17th September.
	15th Native Infantry	Sialkot ...	At the Camp of Exercise from 25th October to 31st December.	638·	24·9	15	648	663	2	...	2	3·90	101·57	·30	·31	·56	11	30	640	4	68	...	...	...	708	15th N. I.	Detachment at Sialkot from 25th October to 31st December.
	19th Native Infantry	Talagang ...	In camp from 1st January to 4th February Marched to Talagang on the 5th February and remained there till the 11th idem, when it marched to Mooltan.	616·4	10·7	11	502	513	5	...	2	1·73	81·44	·97	·81	1·01	31	3	320	2	372	5	...	...	692	19th N. I.	One detachment at Attock (113) from 22nd February to 7th June. Detachment at Talagang (150) from 1st January to 11th February; detachment at Mooltan (124) from 25th October to 23rd November.
	21st Native Infantry	Rawal Pindi	*Nil*	616·8	11·2	21	283	304	6	...	2	1·81	45·88	1·97	·97	1·14	13	1	343	4	344	4	5	...	692	21st N. I.	Detachments at Murree and Attock.
	22nd Native Infantry	Jhelum ...	1st January to 7th February at the Camp of Exercise, and from 8th February to the 31st December at Jhelum	628·6	14·2	8	544	552	1	...	2	2·25	86·54	·18	·15	·43	22	10	405	3	303	...	3	...	711	22nd N. I.	Detachment at Attock and Depôt at Jhelum.
	23rd Native Infantry	Jhelum ...	1st January to 5th February at the Camp of Exercise, and from 6th February to 31st December at Jhelum.	628·8	18·1	24	564	588	3	...	3	2·87	89·69	·51	·47	·86	41	4	670	6	28	...	1	...	697	23rd N. I.	Detachment at Attock and Depôt at Jhelum.
	TOTALS AND AVERAGES OF THE RAWUL PINDI DIVISION ...			4860·1	138·9	159	4,354	4,513	26	1	13	2·85	89·59	·57	·55	·72	174	87	3,957	28	1,604	12	15	...	5,570	... ...	

* One of these died in 1874, but was not struck off the rolls till 1875.

Digitized by Google

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
									Deaths.				Ratio of deaths per cent.			Invalided.		Hindoos.		Mussulmans.		Christians.					
									Present.																		
Division.	Regiment.	Station.	Movements in the year.	Average daily strength present during the year.	Average daily sick.	Remained.	Admitted.	Total treated.	In Hospital.	Out of Hospital.	Absent.	Average daily sick per cent. to the average strength present.	Ratio per cent. of admissions to the average strength.	In Hospital to treated.	Present to average strength present.	Of total deaths—cols. 10 & 11—to average strength present and absent.	For discharge from the service.	For change of climate.	Strength on the 31st December 1875.	Died during the year.	Strength on the 31st December 1875.	Died during the year.	Strength on the 31st December 1875.	Died during the year.	Strength borne on the rolls of the Regiment on the 31st December 1875.	Regiments.	Average number of continuous nights in bed.	Remarks.
Peshawar District.	8th Bengal Cavalry ...	Peshawar ...	*Nil*	388·2	17·6	15	634	649	3	...	1	4·53	163·31	·46	·74	·88	16	20	188	2	269	2	...	...	457	8th B. C. ...	...	Detachments at Michni, Shabkadar, Mackeson and Abazai.
	10th Bengal Cavalry ...	Nowshera ...	*Nil*	377·1	13·5	16	408	424	2	1	1	3·58	108·19	·47	·79	·88	12	15	294	3	160	1	2	...	456	10th B. C. ...	...	Detachments at Nowshera, Abazai, Mackeson and Depôt at Umballa.
	12th Bengal Cavalry ...	Peshawar ...	*Nil*	392·4	14·5	10	696	706	5	1	5	3·69	177·37	·70	1·52	2·40	14	24	260	9	198	2	...	...	458	12th B. C. ...	...	
	12th Native Infantry...	Do. ...	Marched to Jullundur on the 20th December.	596·5	40·6	68	1,485	1,553	30	...	6	6·76	248·12	1·93	5·01	5·14	24	76	376	19	321	17	2	...	699	12th N. I. ...	...	
	20th Native Infantry...	Do. ...	Arrived at Peshawar on the 6th March from Delhi.	603·3	15·5	9	718	727	11	1	7	2·57	118·99	1·51	1·99	2·73	17	13	358	12	351	7	...	...	709	20th N. I. ...	...	
	27th Native Infantry...	Nowshera ...	At Peshawar from 1st January to 17th February, on which date the regiment marched for Nowshera.	593·1	30·9	23	759	783	9	1	3	3·52	127·97	1·15	1·68	1·85	23	3	430	8	278	5	1	...	709	27th N. I. ...	...	Detachments at Doaba out-posts.
	29th Native Infantry...	Peshawar ...	*Nil*	626·2	31·1	28	1,480	1,508	8	1	1	4·96	236·34	·53	1·43	1·42	44	40	438	4	247	5	16	1	701	29th N. I. ...	...	
	30th Native Infantry...	Do. ...	*Nil*	628·3	39·5	88	1,416	1,504	13	...	4	6·29	225·37	·86	2·06	2·40	28	50	438	11	263	6	...	...	700	30th N. I. ...	...	
	Totals and Averages of the Peshawar District ...			4207·1	193·2	257	7,596	7,853	81	5	28	4·59	180·55	1·03	2·04	2·34	178	241	2,782	68	2,086	45	21	1	4,889	...	...	
Troops at Abbottabad.	Peshwar M. Battery	Abbottabad...	Arrived on the 27th February from Kohat.	139·2	8·3	4	276	280	...	...	...	5·96	198·25	...	...	...	4	1	78	...	89	...	...	...	167	Peshawar M. Battry.	...	
	5th Punjab Infantry	Ditto ...	At Abbottabad, from 1st January to 17th October when it marched for the Camp of Exercise.	641·9	20·9	31	615	646	11	...	1	3·25	95·81	1·70	1·71	1·65	30	6	371	2	369	10	...	...	740	5th P. I. ...	...	Detachments furnished to Frontier out-posts.
	5th Goorkha Regiment.	Ditto ...	*Nil*	628·6	27·8	34	618	652	5	...	11	4·42	98·31	·76	·79	2·14	57	1	681	16	4	...	...	...	688	5th Goorkahs ...	...	Detachments at Agror and Haripur.
	Totals and Averages of the Troops at Abbottabad ...			1,409·7	57·	69	1,509	1,578	16	...	12	4·04	107·01	1·03	1·13	1·76	91	8	1,133	18	462	10	...	..	1,595	..	...	
Troops at Kohat.	Hazara M. Battery ...	Kohat ...	At Abbottabad from 1st January to 2nd March. Arrived at Kohat on the 18th March.	136·8	7·7	6	390	396	1	...	1	5·62	285·06	·25	·73	1·20	2	1	89	1	78	1	...	...	167	Hazara M. Battery.	...	36 men on route from the Duffla Expidition from 1st January to the 1st April.
	4th Garrison Company of Artillery.	Ditto ...	*Nil*	51·8	2·5	4	83	87	1	...	1	4·82	160·23	1·15	1·93	3·29	4	2	27	...	32	2	...	...	59	4th Gn. Coy. of Artillery.	...	Detachment at Edwardesabad.
	2nd Punjab Cavalry...	Ditto ...	At Edwardesabad from 1st to 28th January. Arrived at Kohat 3rd February. Took part at the Camp of Exercise.	374·1	19·6	34	631	665	3	...	6	5·24	168·67	·45	·90	1·86	19	10	230	6	257	3	...	...	487	2nd P. C. ...	...	Detachments at Kohat, Bahadur Khel and Abbottabad.
	1st Sikh Infantry ...	Ditto ...	Arrived at Kohat from Edwardesabad on 2nd February.	573·1	29·1	80	759	839	13	...	11	5·08	132·43	1·55	2·27	3·26	35	16	493	18	254	6	...	...	747	1st S. I. ...	...	Detachments at Bahadur Khel and Lahore.
	3rd Sikh Infantry ...	Ditto ...	Arrived at Kohat on the 15th January from Dera Ismail Khan.	603·9	23·5	27	1,266	1,295	22	...	2	3·89	209·97	1·70	3·64	3·27	21	12	483	17	255	7	...	...	738	3rd S. I. ...	...	Detachments furnished to Frontier out-posts.
	4th Punjab Infantry	Ditto ...	*Nil*	623·1	28·1	26	1,587	1,613	4	...	3	4·51	254·69	·25	·61	·94	25	5	365	4	379	3	...	...	744	4th P. I. ...	...	Detachment at Bahadur Khel.
	Totals and Average of the Troops at Kohat ...			2,362·8	110·5	177	4,718	4,895	44	...	24	4·67	99·07	·90	1·89	2·32	106	46	1,687	46	1,275	22	...	...	2,942	...	...	

Digitized by Google

Troops at Edwardesabad.	2nd P. L. Battery ...	Edwardesabad	Arrived at Edwardesabad from Dera Ismail Khan on the 4th February.	84·4	3·4	2	180	182	...	1	1	4·03	213·27	...	1·18	1·66	2	...	66	1	56	1	...	...	108	No. 2 P. L. F. Battery.	...	Nil.
	5th Punjab Cavalry...	Ditto ...	Arrived at Edwardesabad from Dera Ismail Khan on the 27th January.	385·3	23·8	12	855	867	5	...	4	6·18	221·90	·57	1·29	1·83	13	1	247	4	245	5	...	...	492	5th P. C. ...	...	Detachments furnished to Frontier out-posts.
	3rd Punjab Infantry...	Ditto —	Arrived at Edwardesabad from Kohat on the 23rd January.	596·4	28·8	28	1,257	1,285	9	...	10	4·81	216·06	·70	1·50	2·56	25	10	367	9	379	10	...	...	746	3rd P. I. ...	...	
	6th Punjab Infantry	Ditto ...	Arrived at Edwardesabad from Dera Ismail Khan on the 3rd February.	616·8	28·9	44	933	977	14	...	...	4·66	151·26	1·43	2·27	1·87	15	6	369	8	381	6	...	..	750	6th P. I. ...	...	
	Totals and Averages of the troops at Edwardesabad ...			1,684·9	84·9	86	3,225	3,311	28	1	15	5·05	191·40	·84	1·72	2·11	55	17	1,035	22	1,061	22	...	...	2,096	...	...	
Troops at Dera Ismail Khan	3rd P. L. F. Battery...	Dera Ismail Khan.	Arrived at Dera Ismail Khan from Edwardesabad on the 30th January.	81·2	5·7	8	215	223	1	...	2	7·02	264·77	·44	1·23	2·62	...	4	53	1	53	2	...	...	106	3rd P. L. F. Battery.	...	Nil.
	3rd Punjab Cavalry...	Ditto ...	Arrived at Dera Ismail Khan on the 17th January from Dera Ghazi Khan.	375·3	14·	6	628	634	4	...	2	3·73	167·33	·63	1·07	1·22	8	10	238	5	254	1	...	...	492	3rd P. C. ...	...	Detachments at Frontier out-posts.
	2nd Punjab Infantry	Ditto ...	Arrived on 27th January at Dera Ismail Khan from Dera Ghazi Khan.	605·3	26·	30	796	826	10	4	4	4·29	131·50	1·21	2·31	2·46	18	19	320	9	415	9	...	...	735	2nd P. I. ...	...	
	2nd Sikh Infantry ...	Ditto ...	*Nil*	614·9	31·6	60	982	1,042	14	2	5	5·14	159·70	1·34	2·60	2·84	18	15	465	11	275	10	...	...	740	2nd S. I. ...	...	
	Totals and Averages of the troops at Dera Ismail Khan			1,676·7	77·3	104	2,621	2,725	29	6	13	4·61	156·32	1·06	2·08	2·32	44	48	1,076	26	997	22	...	...	2,073	...	...	
Troops at Dera Ghazi Khan.	4th Punjab Cavalry...	Dera Ghazi Khan.	Arrived from Rajanpur on the 6th January.	382·1	21·1	21	548	569	8	...	2	5·53	143·41	1·40	2·09	1·98	3	21	267	5	227	5	10	...	504	4th P. C. ...	...	Detachments at Hurrund and Mungrota.
	1st Punjab Infantry...	Ditto ...	At Dera Ghazi Khan from 1st January to 10th, when it marched for the Camp of Exercise.	613·5	30·3	74	1,254	†1,328	35	...	3	4·94	204·40	2·63	5·70	5·24	25	23	277	23	469	15	...	...	746	1st P. I. ...	...	Detachments at Frontier out-posts,
	4th Sikh Infantry ...	Ditto ...	Arrived from Dera Ghazi Khan from Kohat on the 4th January.	620·9	23·3	31	931	962	11	3	6	3·75	149·94	1·14	2·35	2·70	9	24	461	17	282	3	...	...	743	4th S. I. ...	...	
	Totals and Averages of the Troops at Dera Ghazi Khan			1,616·5	74·7	126	2,733	2,859	54	3	11	4·62	169·06	1·88	3·52	3·45	37	68	1,005	45	978	23	10	...	1,993	...	...	
	1st Punjab Cavalry ...	Rajanpur ...	*Nil*	377·6	15·1	5	603	608	2	...	2	3·99	159·69	·32	·53	·83	11	3	155	2	321	2	...	...	476	1st P. C. ...	...	Detachments at Frontier out-posts.
	Corps of Guides ...	Mardan ...	*Nil*	810·2	40·9	39	1,212	1,251	5	...	2	5·05	149·59	·40	·61	·63	55	29	589	5	515	2	1	...	1,105	Corps of Guides ...	...	Detachments at Peshawar, Yarkand, Abbottabad and Lahore.
	Totals and Averages of the Punjab Frontier Force ...			9,938·4	460·4	606	16,621	17,227	178	10	79	4·63	167·21	1·03	1·89	2·18	395	219	6,680	104	5,589	103	11	...	12,280	...	...	
	Totals and Averages of the whole Army			53,617·	2160·5	2,515	69,036	71,551	374	33	319	4·03	129·75	·94	1·62	1·63	2,069	1,267	43,841	767	18,566	254	306	5	62,713	...	...	
	3rd Madras Light Cavalry.	Saugor ...	.....	238·4	7·6	4	263	267	4	..	...	3·18	110·31	1·49	1·67	1·47	3	...	20	...	241	4	19	...	280	3rd Madras L. C.	5·	
	5th Madras Native Infantry.	Ditto ...	.....	649·2	17·0	23	566	589	11	2	3	2·61	87·18	1·86	3·	2·36	7	17	417	9	236	3	52	4	705	5th Madras N. I.	...	
	11th Madras Native Infantry.	Nagode ...	.....	654·2	9·	7	361	368	5	...	1	1·37	55·18	1·36	·76	·85	20	8	427	5	232	1	45	...	704	11th Madras N. I.	6·2	
	16th Madras Native Infantry.	Jubbulpore...	.....	657·7	17·1	22	593	615	...	...	3	2·60	90·16	...	...	·43	39	2	344	2	263	1	84	...	691	16th Madras N. I.	...	
	20th Madras Native Infantry, Head Quarters, L. W.	Banda ...	.....	376·9	11·4	33	531	564	4	...	1	3·02	140·88	·71	1·06	1·02	31	7	374	3	232	1	77	3	683	20th Madras N. I., Head Quarters, L. W.	3·3	
	20th Madras Native Infantry, R. W.	Nowgong ...	.....	283·2	19·6	16	572	588	2	...	...	6·92	201·97	·34	·70												20th Madras N. I., R. W.	3·2	
	33rd Madras Native Infantry.	Doranda ...	.....	607	9·2	13	226	239	4	...	2	1·51	37·23	1·67	·66	·93	3	3	350	4	259	2	33	...	642	33rd Madras N. I.	...	
			Total ..	3166·6	90·9	118	3,112	3,230	30	2	10	2·62	89·77	·91	·92	1·11	103	37	1,932	23	1,163	12	310	7	3,705	...	...	

Digitized by Google

Summary of the Statistics for the year 1875.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Strength.					Deaths.						Ratio of Deaths.			Per cent. of Strength.		Hindoos.		Mussulmans.		Christians.		
	Present.	Absent.	Total.	Admissions.	Total treated.	Present.		Away from the regiment.	Total.	Average daily sick per cent. of the average strength.	Admissions per cent. of the average strength.	In hospital to treated.	Present to average strength present.	Of total deaths to total strength.	Invalided and discharged on account of disease.	Change of climate.	Strength on the 31st December 1875.	Died during the year.	Strength on the 31st December 1875.	Died during the year.	Strength on the 31st December 1875.	Died during the year.	
						In hospital.	In the lines.																
Artillery	493·4	112·	605·4	1,144	1,168	3	1	5	9	5·59	231·86	·26	·81	1·48	2·43	1·62	299	1·	308	1·94	.....	.....	Artillery.
Cavalry	9841·5	2351·5	1219·3	11,729	12,067	68	4	54	126	3·61	119·18	·56	·73	1·03	3·75	2·33	6,131	1·25	6,064	·81	33	.....	Cavalry.
Infantry	43282·1	6714·	49996·1	56,163	58,316	603	28	260	891	4·15	129·76	1·02	1·46	1·78	3·90	2·37	37,411	1·63	12,194	1·63	273	1·82	Infantry.
Total ...	53617·	9177·5	62794·5	69,036	71,551	674	33	319	1,026	4·03	128·75	·94	1·32	1·63	3·86	2·36	43,841	1·75	18,566	1·37	306	1·63	Total.
Regular Army	39411·4	5433·9	44845·3	48,490	50,251	461	20	223	704	3·99	123·03	·91	1·22	1·56	4·02	2·55	32,375	1·71	13,077	1·19	289	1·73	Regular Army.
Central India Force ...	4267·2	1415·5	5682·7	3,925	4,073	35	3	17	55	2·96	91·98	·88	·91	·96	2·03	·96	4,786	1·	900	·78	6	.....	Central India Force.
Punjab Frontier Force ...	9938·4	2328·1	12266·5	16,621	17,227	178	10	79	267	4·63	167·24	1·03	1·89	2·17	4·01	2·20	6,680	2·45	5,589	1·84	11	.....	Punjab Frontier Force.
Total ...	53617·	9177·5	62794·5	69,036	71,551	674	33	319	1,026	4·03	128·75	·94	1·32	1·63	3·86	2·36	43,841	1·75	18,566	1·37	306	1·63	Total.
Madras Regiments ...	3466·6	207·3	3673·9	3,112	3,230	30	2	10	42	2·62·	89·77	·93	·92	1·14	2·97	1·07	1,932	1·19	1,463	·82	310	2·26	Madras Regiments.

Statement showing the Gain and Loss in strength of the Native Army of Bengal during 1875.

Present with their regiments on the 1st January 1875	50,741
At their homes on furlough	856
At their homes on sick leave	441
On command, &c., &c.	10,135
Total Strength on the 1st January 1875 ...	63,768

Additions of the year.

Recruits	5,973
Otherwise	92
Total Additions ...	6,065

Permanent Loss of the year.

By deaths	1,026
Invalided for discharge	2 069
Discharged by Commanding Officer at their own request	1,527
Discharged for physical disability or otherwise	767
Desertion, struck off for bad conduct, &c., &c.	731
Total Loss ...	6,120
Remaining on Rolls on the 31st December 1875 ...	63,713

Digitized by Google

Table No. II.

General Statement of the Sickness and Mortality of the Native Army of Bengal for the year 1875.

Division.	Serial Numbers.	Diseases.	Admitted.	Died.	Strength present—53,617. Admissions per cent. of: Strength.	Admissions per cent. of: Total Admissions.	Deaths per cent. of: Strength.	Deaths per cent. of: Total Deaths.	Deaths per cent. of: Admissions.
		General Diseases.							
Sub-Division A.	1	Small-pox	34	7	·063	·049	·013	1·04	20·59
	2	Cow-pox	2	...	·004	·003	...	...	...
	3	Chicken-pox	29	...	·054	·042	...	...	...
	4	Measles	97	2	·181	·140	·004	·30	2·06
	5	Scarlet fever	1	...	·002	·001	...	...	...
	9	Enteric fever	11	4	·021	·016	·008	·59	36·36
	11	Simple continued fever	65	2	·121	·094	·004	·30	3·07
	13	Febricula	105	1	·196	·152	·002	·15	·95
	15a	Ague, quotidian	31,757	89	59·228	46·001	·166	13·20	·28
	15b	„ tertian	1,026	...	1·914	1·486	...	...	...
	15c	„ quartan	463	...	·863	·671	...	...	...
	15d	„ irregular	16	...	·030	·023	...	...	...
	16	Remittent fever	536	59	1·000	·776	·110	8·75	11·
	17	Simple cholera	3	2	·006	·004	·004	·30	66·66
	18	Malignant cholera	132	58	·246	·191	·108	8·60	43·94
	21	Mumps	109	...	·203	·158	...	...	...
	22	Influenza	80	...	·056	·043	...	...	...
	26	Sloughing phagedæna	1	...	·002	·001	...	...	...
	30a	Simple erysipelas	34	...	·063	·049	...	...	...
	30b	Phlegmonous „	2	1	·004	·003	·002	·15	50·
	31	Pyæmia	1	...	·002	·001	...	...	...
		Total	34,454	225	64·259	49·907	·420	33·38	·64
Sub-Division B.	34	Acute rheumatism	389	...	·725	·563	...	...	...
	35	Gonorrhœal „	7	...	·013	·010	...	...	...
	36	Synovial „	17	...	·032	·025	...	...	...
	37	Muscular „	323	...	·601	·466	...	...	...
	37a	Lumbago	704	...	1·311	1·020	...	...	...
	37b	Stiff neck	26	...	·048	·037	...	...	...
	38	Chronic rheumatism	1,091	2	2·035	1·580	·002	·30	·18
	39	Acute gout	4	...	·006	·006	...	...	...
	40	Chronic „	3	...	·006	·004	...	...	...
	42	Chronic osteo-arthritis	1	...	·002	·001	...	...	...
	43a	Primary syphilis	795	2	1·483	1·151	·004	·30	·25
	43b	Secondary „	379	4	·707	·549	·008	·59	1·05
	44	Cancer	3	1	·006	·004	·002	·15	33·33
	45	Colloid	7	...	·013	·010	...	...	...
	48	True leprosy	24	...	·045	·035	...	...	...
	49	Scrofula	8	1	·015	·012	·002	·15	12·50
	49–1	Phthisis pulmonalis	116	31	·216	·168	·058	4·59	26·72
	49–1	Tabes mesenterica	1	1	·002	·001	·002	·15	100·
	50	Rickets	1	...	·002	·001	...	...	...
	52	Diabetes	2	...	·004	·003	...	...	...
	53	Purpura	2	...	·004	·003	...	...	...
	54	Scurvy	103	3	·192	·149	·006	·45	2·81
	55	Anæmia	96	3	·179	·139	·006	·45	3·12
	57	General dropsy	2	...	·004	·003	...	...	...
		Total	4,103	48	7·652	5·943	·089	7·12	1·16
		Local Diseases.							
Nervous System.	59	Encephalitis	2	2	·004	·003	·004	·30	100·
	60	Meningitis	2	...	·004	·003	...	...	...
	63	Yellow softening (of the brain)	1	...	·002	·001	...	...	...
	65	Apoplexy	7	4	·013	·010	·008	·59	57·14
	66	Sunstroke	16	5	·030	·023	·009	·74	31·25
	81	Inflammation of the nerves	1	...	·002	·001	...	...	...
	84	Paralysis	3	1	·006	·004	·002	·15	33·33
	85	Hemiplegia	10	1	·019	·014	·002	·15	10
	86	Paraplegia	6	3	·011	·009	·006	·45	50
	87	Locomotor ataxy	5	...	·009	·007	...	...	...
	89a	Facial paralysis	21	...	·039	·030	...	...	...
	91	Hydrophobia	1	1	·002	·001	·002	·15	100·
	93	Epilepsy	15	...	·028	·022	...	...	...
	93a	Epileptic vertigo	3	...	·006	·004	...	...	...
	95	Spasm of muscle	2	...	·004	·003	...	...	...
	97	Shaking palsy	2	...	·004	·003	...	...	...
	99	Hysteria	2	...	·004	·003	...	...	...
	101a	Facial neuralgia	114	...	·213	·165	...	...	...
	101b	Brow ague	146	...	·272	·212	...	...	...
	101c	Sciatica	148	...	·276	·214	...	...	...
	101d	Pleurodynia	22	...	·041	·032	...	...	...
	102	Hyperæsthesia	1	...	·002	·001	...	...	...
	103	Anæsthesia	5	...	·009	·007	...	...	...
	105a	Acute mania	16	1	·030	·023	·002	·15	6·25
	105b	Chronic „	4	...	·008	·006	...	...	...
	106	Melancholia	6	...	·011	·009	...	...	...
	107a	Acute dementia	1	...	·002	·001	...	...	...
		Total	562	18	1·048	·815	·034	2·67	3·20

Daily average sick—2160·5.

Digitized by Google

General Statement of the Sickness and Mortality of the Native Army of Bengal for the year 1875—contd.

Division.	Serial Numbers.	Diseases.	Strength present — 53,617. Admitted.	Died.	Daily average sick — 2160·5. Admissions per cent. of Strength.	Admissions per cent. of Total Admissions.	Deaths per cent. of Strength.	Deaths per cent. of Total Deaths.	Deaths per cent. of Admissions.
Diseases of the Eye.	111	Conjunctivitis	1,466	...	2·734	2·124	...	...	...
	112	Catarrhal ophthalmia	110	...	·205	·159	...	...	...
	113	Pustular "	1	...	·002	·001	...	...	...
	114	Purulent "	33	...	·062	·048	...	...	...
	117	Gonorrhœal "	1	...	·002	·001	...	...	...
	118	Chronic "	9	...	·017	·013	...	...	...
	119	Chemosis	3	...	·006	·004	...	...	...
	121	Pterygium	14	...	·026	·020	...	...	...
	125	Keratitis	32	...	·059	·046	...	...	...
	128	Ulcer of the cornea	23	...	·043	·033	...	...	...
	129	Opacity	6	...	·011	·009	...	...	...
	130	Conical cornea	1	...	·002	·001	...	...	...
	134	Sclerotitis	2	...	·004	·003	...	...	...
	135	Staphyloma	1	...	·002	·001	...	...	...
	136	Iritis	14	...	·026	·020	...	...	...
	143	Choroiditis	1	...	·002	·001	...	...	...
	144	Retinitis	3	...	·006	·004	...	...	...
	147	Impaired vision	10	...	·019	·014	...	...	...
	152	Cataract	5	...	·009	·007	...	...	...
	159	Short sight	2	...	·004	·003	...	...	...
	162	Hemeralopia	15	...	·027	·022	...	...	...
	163	Nyctalopia	23	...	·042	·033	...	...	...
	166	Abscess and fistula	2	...	·004	·003	...	...	...
	169	Inflammation of the eyelids	2	...	·004	·003	...	...	...
	170	Hordeolum	23	...	·042	·033	...	...	...
	171	Abscess in the meibomian glands	2	...	·004	·003	...	...	...
	177	Tarsal ophthalmia	4	...	·008	·006	...	...	...
	180	Abscess in the orbit	1	...	·002	·001	...	...	...
		Total	1,809	...	3·373	2·620	...	...	...
Diseases of the Ear.	190a	Acute inflammation of the external meatus	228	..	·424	·330	...	...	...
	190b	Chronic " " "	19	...	·035	·027	...	...	...
	191	Abscess " "	55	...	·102	·080	...	...	...
	192	Accumulation of wax	6	...	·011	·009	...	...	...
	193	Polypus	1	...	·002	·001	...	...	...
	196	Inflammation of the membrana tympani	2	...	·004	·003	...	...	...
	197	Ulceration " "	1	...	·002	·001	...	...	...
	203	Organic disease	1	...	·002	·001	...	...	...
	205a	Functional deafness	18	...	·033	·026	...	...	...
	205b	Deafness from disease	5	...	·009	·007	...	...	...
		Total	336	...	·626	·487	...	...	...
Diseases of the Nose.	210	Ulceration of the pituitary membrane	1	...	·002	·001	...	...	...
	211	Abscess of the septum	1	...	·002	·001	...	...	...
	213	Epistaxis	13	...	·024	·019	...	...	...
	214	Hypertrophy of the pituitary membrane	2	...	·004	·003	...	...	...
	215	Polypus nasi	2	...	·004	·003	...	...	...
		Total	19	...	·035	·027	...	...	...
Circulatory System.	219	Pericarditis	3	1	·006	·004	·002	·15	33·33
	225	Valve disease	2	..	·004	·003	...	...	...
	225-1	Aortic valve disease	5	2	·009	·007	·004	·30	40
	226	Fibrinous concretions in the cavities of the heart	1	1	·002	·001	·002	·15	100
	229	Hypertrophy of the heart	2	...	·004	·003	...	...	...
	231	Atrophy " "	1	1	·002	·001	·002	·15	1·0
	233	Fatty degeneration of the heart	1	...	·002	·001	...	...	...
	235	Aneurism	1	1	·002	·001	·002	·15	100
	243	Syncope	2	...	·004	·003	...	...	...
	244	Palpitation of the heart	10	1	·019	·014	·002	·15	10
	249	Dilatation	1	...	·002	·001	...	...	...
	250	Aneurism	2	...	·004	·003	...	...	...
	260	Phlebitis	1	...	·002	·001	...	...	...
	263	Obstruction of the veins	1	...	·002	·001	...	...	...
	266	Varicose veins	12	...	·022	·017	...	...	...
		Total	45	7	·084	·065	·013	1·04	15·55
Absorbent System.	269	Inflammation of the lymphatics	8	...	·015	·012	...	...	...
	271	" of glands	129	...	·24	·18	...	...	...
	272	Suppuration of "	8	...	·015	·012	...	...	...
		Total	145	...	·270	·210	...	...	...
Ductless Glands.	279	Inflammation of the thyroid gland	2	...	·004	·003	...	...	...
	280	Goitre	91	...	·169	·132	...	...	...
		Total	93	...	·173	·135	...	...	...

Digitized by Google

General Statement of the Sickness and Mortality of the Native Army of Bengal for the year 1875—contd.

Division.	Serial Numbers.	Diseases.	Strength present — 53,617. Admitted.	Died.	Daily average sick—2160·5. Admissions per cent. of Strength.	Admissions per cent. of Total Admissions.	Deaths per cent. of Strength.	Deaths per cent. of Total Deaths.	Deaths per cent. of Admissions.
Respiratory System.	289	Coryza	100	...	·186	·742	...	...	...
	292	Laryngeal catarrh	8	...	·015	·012	...	...	...
	298a	Acute laryngitis	18	1	·033	·026	·002	·15	5·55
	302	Aphonia	2	...	·004	·003	...	...	...
	305	Bronchial catarrh	537	1	1·002	·778	·002	·15	·18
	306a	Acute bronchitis	940	12	1·753	1·362	·022	1·78	1·27
	306b	Chronic „	292	5	·544	·423	·009	·74	1·71
	314	Asthma	108	...	·201	·156	...	...	...
	315	Pneumonia	701	177	1·307	1·015	·330	26·26	25·24
	318	Passive congestion	7	...	·013	·010	...	...	...
	319	Pulmonary apoplexy	6	1	·011	·009	·002	·15	16·66
	325	Acute pneumonic phthisis	1	...	·002	·001	...	...	...
	326	Chronic „ „	12	3	·022	·017	·006	·45	25
	331	Pleurisy	187	10	·348	·271	·019	1·48	5·34
	332	Chronic pleurisy	2	1	·004	·003	·002	·15	50
	333	Empyema	1	...	·002	·001	...	...	...
		Total	2,923	211	5·449	4·233	·393	31·31	7·22
Digestive System.	344	Ulcer of the lips	3		·005	·004	...	...	...
	348	Stomatitis	36	...	·067	·052	·002	·15	2·77
	349	Ulcerative stomatitis	2	1	·004	·003	...	...	...
	350	Thrush	6	...	·011	·009	...	...	...
	352	Abscess of the cheek	4	...	·008	·006	...	...	...
	353	Cancrum-oris	1	...	·002	·001	...	...	...
	355	Ranula	6	...	·011	·009	...	...	...
	365	Teething	1	...	·002	·001	...	...	...
	366	Caries	81	...	·151	·117	...	...	...
	367	Necrosis	1	...	·002	·001	...	...	...
	371	Inflammation of the dental pulp	1	...	·002	·001	...	...	...
	377	Gum-boil	95	...	·177	·138	...	...	...
	380	Inflammation of the gums	8	...	·015	·012	...	...	...
	381	Ulceration „ „	3	...	·006	·004	...	...	...
	386	Epulis	2	...	·004	·003	...	...	...
	389	Caries of the alveoli	1	...	·002	·001	...	...	...
	393	Mercurial inflammation	4	...	·008	·006	...	...	...
	410	Mechanical injuries of the alveoli, &c.	1	...	·002	·001	...	...	...
	412	Glossitis	2	...	·004	·003	...	...	...
	413	Ulcer of the tongue	3	...	·006	·004	...	...	...
	419	Sore throat	54	...	·100	·078	...	...	...
	420	Relaxed throat	1	...	·002	·001	...	...	...
	421	Ulcerated „	8	...	·015	·012	...	...	...
	422	Quinsy	12	...	·022	·017	...	...	...
	423	Tonsilitis	129	...	·240	·187	...	...	...
	426	Elongated uvula	1	...	·002	·001	...	...	...
	431	Pharyngitis	1	...	·002	·001	...	...	...
	433	Abscess of the pharynx	1	...	·002	·001	...	...	...
	437	Inflammation of the salivary glands	5	...	·009	·007	...	...	...
	438	Salivation	6	...	·011	·009	...	...	...
	449	Gastritis	9	...	·017	·013	...	...	...
	451	Hæmatemesis	5	...	·009	·007	...	...	...
	460	Dyspepsia	620	2	1·147	·898	·004	·30	·32
	461	Gastrodynia	5	...	·009	·007	...	...	...
	464	Enteritis	10	4	·019	·014	·008	·59	40
	465	Typhlitis	2	...	·004	·003	...	...	...
	466	Dysentery	3,703	38	6·906	5·364	·071	5·63	1·02
	468	Perforation of the intestines	1	1	·002	·001	·002	·15	100
	475	Tympanites	1	...	·002	·001	...	...	...
	476	Obstruction of the intestines	1	1	·002	·001	·002	·15	100
	479	Internal strangulation	2	1	·004	·003	·002	·15	50
	480a	Hernia, reducible	18	...	·033	·026	...	...	...
	480b	„ irreducible	1	...	·002	·001	...	...	...
	483–1	Ascaris lumbricoides	9	...	·017	·013	...	...	...
	483–13	Tænia solium	11	...	·020	·016	...	...	...
	484	Diarrhœa	1,921	33	3·582	2·733	·059	4·74	1·56
	486	Colic	769	2	1·434	1·114	·004	·30	·26
	487	Constipation	219	...	·408	·317	...	...	...
	488	Ulceration of the rectum and anus	3	...	·006	·004	...	...	...
	489	Abscess „ „	4	..	·008	·006	...	...	...
	490	Fistula in ano	20	...	·037	·029	...	...	...
	491a	Internal hæmorrhoids	67	...	·124	·097	...	...	...
	491b	External „	38	...	·070	·055	...	...	...
	492	Hæmorrhage from the rectum	1	...	·002	·001	...	...	...
	493	Fissure of the anus	9	...	·017	·013	...	...	...
	494	Prolapsus	5	...	·009	·007	...	...	...
	496	Condyloma of the anus	3	...	·006	·004	...	...	...
	501	Hepatitis	71	5	·132	·103	·009	·74	7·04
	502	Abscess of the liver	2	...	·004	·003	...	...	...
	504	Congestion of the liver	35	1	·065	·051	·002	·15	2·85
	513	Jaundice	55	1	·102	·080	·002	·15	1·81
	520	Gallstones	4	...	·008	·006	...	...	...
	524	Splenitis	366	11	·683	·530	·020	1·63	3
	526	Congestion of the spleen	76	3	·141	·110	·006	·45	3·94
	527	Fibrinous deposit	1	...	·002	·001	...	...	...
	528	Hypertrophy of the spleen	159	9	·296	·230	·017	1·33	5·66
	531	Peritonitis	7	4	·013	·010	·008	·59	57·14
	532	Ascites	3	1	·006	·004	·002	·15	33·33
	534	Inflammation of mesenteric glands	1	...	·002	·001	...	...	...
		Total	8,716	117	16·256	12·635	·218	17·35	1·34

Digitized by Google

General Statement of Sickness and Mortality of the Native Army of Bengal for the year 1875—contd.

Division.	Serial Numbers.	Diseases.	Strength present—53,617. Admitted.	Died.	Daily average sick—2160·5. Admissions per cent. of Strength.	Admissions per cent. of Total Admissions.	Deaths per cent. of Strength.	Deaths per cent. of Total Deaths.	Deaths per cent. of Admissions.
Urinary System.	538-1	Acute Bright's disease	15	...	·027	·022	...	...	...
	538-2	Chronic " "	1	...	·002	·001	...	...	...
	550	Calculus	1	...	·002	·001	...	...	...
	551	Calculus in the ureter	9	...	·017	·013	...	...	...
	553	Hæmaturia renalis	2	...	·004	·003	...	...	...
	554	Suppression of urine	1	...	·002	·001	...	...	...
	557a	Acute cystitis	19	...	·036	·027	...	...	...
	570	Calculus	2	...	·004	·003	...	...	...
	571	Hæmaturia (Vesical)	2	...	·004	·003	...	...	...
	574	Spasm	1	...	·002	·001	...	...	...
	576	Incontinence of urine	1	...	·002	·001	...	...	...
	577	Retention of urine	6	1	·011	·009	·002	·15	16·66
	583	Chronic enlargement of the prostate gland	1	...	·002	·001	...	...	...
	585	Gonorrhœa	426	...	·795	·617	...	...	...
	586	Balanitis	2	...	·004	·003	...	...	...
	587	Phimosis	12	...	·022	·017	...	...	...
	588	Paraphimosis	7	...	·013	·010	...	...	...
	589	Bubo	102	...	·190	·148	...	...	...
	591	Epididymitis	40	...	·074	·058	...	...	...
	593	Condyloma	1	...	·002	·001	...	...	...
	594	Gleet	4	...	·008	·006	...	...	...
	595	Stricture	17	...	·031	·024	...	...	...
	599	Urinary fistula	1	...	·002	·001	...	...	...
		Total	673	1	1·256	·975	·002	·15	·15
Generative System.	602	Inflammation of the penis	1	...	·002	·001	...	...	...
	608	Sloughing of the scrotum	4	1	·008	·006	·002	·15	25
	612	Hydrocele	3	...	·006	·004	...	...	...
	613	Varicocele	3	...	·006	·004	...	...	...
	616	Inflammation of the tunica vaginalis	1	...	·002	·001	...	...	...
	617	Hydrocele	11	...	·020	·016	...	...	...
	617c	" encysted	4	...	·008	·006	...	...	...
	620	Epidydimitis	174	...	·324	·252	...	...	...
	620a	Acute orchitis	15	...	·027	·022	...	...	...
	620b	Chronic "	10	...	·019	·014	...	...	...
	627	Spermatorrhœa	1	...	·002	·001	...	...	...
		Total	227	1	·424	·329	·002	·15	·44
Male Mammilla.	751	Inflammation of the male mammilla	1	...	·002	·001	...	...	...
Organs of Locomotion.	755	Ostitis	6	...	·011	·009	...	...	...
	755a	Periostitis	26	...	·048	·038	...	...	...
	756	Diffuse periostitis	2	1	·004	·003	·002	·15	·50
	758	Chronic abscess	1	...	·002	·001	...	...	...
	759	Caries	8	...	·015	·012	...	...	...
	760	Necrosis	7	...	·013	·010	...	...	...
	761	Mollities ossium	1	...	·002	·001	...	...	...
	768	Acute synovitis	47	...	·087	·068	...	...	...
	769	Chronic "	18	...	·033	·026	...	...	...
	771	Abscess of the joints	1	...	·002	·001	...	...	...
	773	Dropsy of "	3	...	·006	·004	...	...	...
	774	Degeneration of cartilage	1	...	·002	·001	...	...	...
	786	Angular deformity	2	...	·004	·003	...	...	...
	793	Inflammation of the muscles	2	...	·004	·003	...	...	...
	797	Progressive muscular atrophy	3	...	·006	·004	...	...	...
	804	Inflammation of tendons	1	...	·002	·001	...	...	...
	807	Contraction of "	2	...	·004	·003	...	...	...
	811	Wry-neck	1	...	·002	·001	...	...	...
	812	Enlarged bursa patellæ	1	...	·002	·001	...	...	...
	813	Enlargement of other bursæ	6	...	·011	·009	...	...	...
	814	Bursal tumour	1	...	·002	·001	...	...	...
	816	Bunion	2	...	·004	·003	...	...	...
	817	Ganglion	6	...	·011	·009	...	...	...
		Total	148	1	·276	·214	·002	·15	·67
Cellular Tissue.	818	Inflammation of the cellular tissue	58	...	·108	·084	...	...	...
	819	Abscess	1,226	...	2·286	1·776	...	...	...
	821	Slough	1	...	·002	·001	...	...	...
	824	Non-malignant tumour	7	...	·013	·010	...	...	...
	825	Guinea-worm	239	...	·446	·346	...	...	...
		Total	1,531	...	2·855	2·218	...	...	...

Digitized by Google

General Statement of the Sickness and Mortality of the Native Army of Bengal for the year 1875—concld.

Division.	Serial Numbers.	Diseases.	Admitted.	Died.	Strength present—53,617. Daily average sick—2160·5. Admissions per cent. of Strength.	Admissions per cent. of Total Admissions.	Deaths per cent. of Strength.	Deaths per cent. of Total Deaths.	Deaths per cent. of Admissions.
Cutaneous System.	827	Erythema	9	...	·017	·013	...	...	...
	828	Intertrigo	4	...	·008	·006	...	...	..
	829	Roseola	2	...	·004	·003	...	...	...
	830	Urticaria	41	...	·077	·059	...	...	...
	830a	Urticaria, acuta	53	...	·099	·077	..	...	...
	834	Prurigo	5	...	·009	·007	...	...	...
	835	Lichen	8	...	·015	·012	...	...	...
	837	Pityriasis	2	...	·004	·003	...	...	...
	838a	Psoriasis vulgaris	22	...	·041	·033	...	...	...
	838b	„ guttata	11	...	·020	·016	...	...	...
	838c	„ diffusa	3	...	·006	·004	...	...	...
	840	Miliaria	1	...	·002	·001	...	...	...
	841a	Herpes, phlyctenodes	105	...	·196	·153	...	...	...
	841b	„ circinatus	97	...	·181	·141	...	...	...
	841d	„ zoster	63	...	·118	·091	...	...	...
	842	Pemphigus	7	...	·013	·010	...	...	...
	843a	Eczema, simplex	111	...	·207	·161	...	..	...
	843b	„ rubrum	11	...	·020	·016	...	...	..
	843c	„ impetiginodes	14	...	·026	·020	...	...	...
	843d	„ chronicum	11	...	·020	·016	...	...	...
	844	Impetigo	25	...	·047	·036	...	...	...
	845	Rupia	3	...	·006	·004	..	...	...
	846	Ecthyma	5	...	·009	·007	...	...	...
	848	Sycosis	1	...	·002	·001	...	...	...
	857	Chilblain	5	...	·009	·007	..	..	...
	859	Ulcer	1,600	1	2·984	2·317	·002	·15	·06
	860	Fissures	7	...	·013	·010	...	...	...
	861	Boil	1,842	...	3·436	2·668	...	...	...
	863	Carbuncle	26	...	·048	·038	...	...	...
	863	Onychia	17	...	·031	·024	...	...	...
	865	Whitlow	196	...	·365	·284	...	...	...
	868	Corn	8	...	·015	·012	..	...	...
	869	Elephantiasis, arabum	1	...	·002	·001	..	...	...
	871	Fibro-cellular tumour	1	...	·002	·001	...	...	...
	873	Fatty tumour	2	...	·004	·003	...	..	...
	875	Sebaceous tumour	5	...	·009	·007	...	...	...
	877	Warts	3	...	·006	·004	...	...	...
	880	Cheloid	1	...	·002	·001	...	...	...
	882	Delhi boil	11	...	·020	·016	...	...	...
	884	Ingrown nail	7	...	·013	·010	...	...	...
	886	Tinea tonsurans	43	...	·080	·062	...	...	...
	890	„ favosa	9	...	·017	·013	...	..	...
	891	„ versicolor	6	...	·011	·009	...	...	...
	894	Scabies	385	...	·718	·558	...	...	...
	900	Irritation caused by stinging insects	75	...	·140	·109	...	...	...
	901	„ „ nettles and other stinging plants	3	...	·006	·004	...	..	...
		Total	4,867	1	9·077	7·059	·002	·15	·02
Conditions, &c.	905	Debility	1,103	28	2·055	1·596	·053	4·15	2·54
Poisons.	906	Poisoned by arsenic	1	1	·002	·001	·002	·15	100
	907	„ „ mercury	4	...	·008	·006	...	...	...
	908	„ „ lead	1	...	·002	·001	...	...	...
	936	„ „ opium	3	3	·004	·003	·004	·30	100
	937	„ „ Indian hemp	16	...	·029	·023	...	...	..
	938	„ „ alcohol	4	...	·008	·006	...	...	..
	943	„ „ belladonna	1	...	·002	·001	...	...	..
	945	„ „ thorn apple	3	...	·004	·003	...	...	...
	984	„ „ steel filings	3	...	·004	·003	...	...	...
	985-1	„ „ snakes	16	1	·029	·023	·002	·15	6·25
	985-2	„ „ scorpions	7	...	·013	·010	...	...	...
	985-3	„ „ stinging insects	2	...	·004	·003	...	...	...
		Total	58	4	·108	·084	·008	·59	6·90
Injuries.	992	Burns and scalds	153	...	·285	·228	...	...	..
	993	Lightning stroke	1	...	·002	·001	...	...	...
	994	Multiple injury	3	...	·006	·004	...	...	...
	995	Asphyxia	1	...	·002	·001	...	...	...
	1003	Concussion of the brain	8	1	·015	·012	·002	·15	12·50
	1025	Foreign bodies in the cornea	1	...	·002	·001	...	...	...
	1097	„ „ embedded, upper extremeties	5	...	·009	·007	...	...	...
	1120	„ „ „ lower „	28	...	·053	·041	...	...	...
	1148	Blistered feet	2,543	...	4·741	3·682	...	...	...
		Contusions	2,863	...	5·340	4·147	...	...	...
		Wounds	932	5	1·738	1·350	·009	·74	·54
		Sprains	113	4	·211	·164	·008	·59	3·54
		Fractures	531	...	·990	·769	...	...	...
		Dislocations	30	...	·056	·043	...	...	..
		Punishment	2	...	·004	·003	...	...	...
		Total	7,313	10	13·463	10·448	·019	1·48	·14
		Diseases not yet diagnosed	10	2	·019	·014	·004	·30	20
		No appreciable disease	2	...	·004	·003	...	...	...
		Grand Total	69,036	674	128·758	100	1·257	1·00	·98

Digitized by Google

Table No. III.

Showing the Age of the Sepoys of the Native Army and the Death-rate according to age.

	Under 20.		20 to 24.		25 to 29.		30 to 34.		35 to 39.		40 and upwards.		Total.	
	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.
		In. | Out.		In. | Out.		In. | Out.		In. | Out.		In. | Out.		In. | Out.		In. | Out.
Artillery	16	... | ...	132	1 | ...	162	... | 3	130	... | ...	70	... | 1	94	2 | 2	604	3 | 6
Per cent. ...	2·65	...	21·85	·76	26·82	1·85	21·52	...	11·59	1·43	15·56	4·25	100	1·49
Cavalry	8·80	2 | 2	2,482	6 | 7	2,220	10 | 14	2,225	11 | 7	2,002	12 | 8	2,386	27 | 20	12,195	68 | 58
Per cent. ...	7·22	·45	20·35	·52	18·20	1·08	18·25	·81	16·42	·99	19·56	1·97	100	1·03
Infantry	5,043	26 | 18	11,311	154 | 59	12,963	146 | 78	9,578	118 | 68	6,720	85 | 34	4,570	74 | 31	50,185	603 | 288
Per cent. ...	10·05	·87	22·54	1·88	25·83	1·73	19·08	1·94	13·39	1·77	9·11	2·30	100	1·77
Total ...	5,939	28 | 20	13,925	161 | 66	15,345	156 | 95	11,933	129 | 75	8,792	97 | 43	7,050	103 | 53	62,984	674 | 352
Per cent. ..	9·43	·81	22·11	1·63	24·36	1·63	18·95	1·71	13·96	1·59	11·19	2·21	100	1·63
Regular Army	4,145	21 | 10	10,248	118 | 54	11,378	122 | 64	8,594	94 | 53	5,960	54 | 27	4,709	52 | 35	45,034	461 | 243
Per cent. ...	9·20	·75	22·76	1·68	25·26	1·63	19·08	1·71	13·24	1·36	10·46	1·85	100	1·56
Central India Force	500	2 | 1	1,036	4 | 1	1,122	7 | 4	1,068	4 | 4	1,084	10 | 4	870	8 | 6	5,680	35 | 20
Per cent. ...	8·80	·60	18·24	·48	19·75	·98	18·80	·75	19·09	1·29	15·32	1·61	100	·97
Punjab Frontier Force	1,294	5 | 9	2,641	39 | 11	2,845	27 | 27	2,271	31 | 18	1,748	33 | 12	1,471	43 | 12	12,270	178 | 89
Per cent. ...	10·55	1·08	21·52	1·89	23·19	1·90	18·51	2·16	14·24	2·57	11·99	3·74	100	2·18
Total ...	5,939	28 | 20	13,925	161 | 66	15,345	156 | 95	11,933	129 | 75	8,792	97 | 43	7,050	103 | 53	62,984	674 | 352
Per cent. ...	9·43	·81	22·11	1·63	24·36	1·63	18·95	1·71	13·96	1·59	11·19	2·21	100	1·63

Digitized by Google

APPENDIX.

Medical history of the 1st Goorkha Light Infantry while employed on service in the Malay Peninsula, from the 26th of November 1875 to the 31st of March 1876.

By Surgeon-Major C. F. Oldham, in medical charge of the Regiment.

1. The regiment, of the strength marginally noted, left Dhurmsala on 30th October *en route* for the camp of exercise at Delhi. At Umballa, on 16th November, orders were received to prepare for foreign service and to proceed at once by rail to Calcutta. Steps were immediately taken to weed out sick and weakly men, and to make up the hospital establishment to its full strength, a portion having been left behind with the regimental depôt. The regiment reached Calcutta on 20th November, and was encamped on the glacis of Fort William. Strength.

European officers	...	10
Native officers	...	10
Non-commissioned officers and sepoys	...	457
Total	...	477

2. The men received a free kit, consisting of— Free kit given to the men.

1 Water-proof sheet,	1 Pair ammunition boots,
1 Blanket,	2 Pair woollen socks,
1 Banyan,	1 Pair putties, for the legs,
1 Cholera belt,	1 Water bottle covered with leather.

All these were most useful, especially the water-proof sheet and the water bottle, which latter was invaluable. While the socks lasted, there were but few footsore cases.

3. Surgeon G. Bomford was attached to the regiment for duty. Medical officer attached.

On 26th November the regiment embarked on board the steamship *Malda* and on the next day left the Sandheads for Penang. On board this vessel were Brigadier-General Ross and Staff, the 1st Goorkhas—477 strong, and 180 commissariat followers. Date of embarkation.

4. On 29th November, one of the commissariat followers was attacked with cholera, and died within four hours. On the same day a sepoy was attacked with this disease in a mild form. Next day one of the crew of the steamer was seized with the same complaint. The two latter recovered. The usual sanitary precautions were taken. The troop-deck was dry-scrubbed daily, disinfecting powder sprinkled about, and carbolic acid diluted with water poured into scuppers, latrines, &c. I had the cholera patients put into the boats, hanging to the davits, on the lee side of the ship, with awnings over them; and the clothing and bedding of the man who died were thrown overboard. Cholera. Sanitary precautions taken.

5. The latrine accommodation was barely sufficient for the large number of men on board. At least two latrines for each hundred men should be provided and the greater part of these should be outside the ship. Latrines on board the steamer.

6. The cooking-places were so unlike anything the men had ever seen before that, at first, they had many scruples as to using them. Hunger, however, at last prevailed, and they took to the iron cabooses and coal as if they had always been used to them. They did not even take the trouble to *leep* the iron-work of the former. The only formality adopted was to put up a canvas screen round the cooking-place. About six men cooked for each company. The accommodation was, however, so limited, that it was with great difficulty that the whole of the men could have their food cooked during the day. If, when the number of men is large, non-cooking rations were supplied for one-third or even for one-half the passage, so as to allow of one-half of the men only cooking each day, it would greatly diminish the difficulty arising from the limited space available, on board-ships, for cooking-places. Cooking-places.

7. On the return voyage the regiment was divided between the *Himalayah*, *Arabia*, and *Czarewitch*, so that the men had more room; and, as they had become comparatively old sailors, they gave but little trouble with their cooking arrangements. They, however, insisted that they could not eat rice without certain formalities, which could not be gone through on board-ship. The return voyage.

8. After a fine passage of nine days, the *Malda* arrived at Penang on 4th December. Beyond the three cases of cholera, no disease occurred on board, but the men suffered severely from sea-sickness—muscular cramps, and semi-collapse occurring in several cases. On arrival at Penang, the men were all allowed to go on shore, where they cooked and ate in comfort, and procured large quantities of fruit. Next day 100 men, under Lieutenant-Colonel Story, were ordered to proceed to Larut with the force under Brigadier General Ross, C. B. The remainder of the regiment, with a half-battery of artillery, under Lieutenant-Colonel Clay, sailed in the *Malda* for Malacca, which was said to be threatened by the Malays. With Length of passage. Disembarkation.

Digitized by Google

Medical arrangements.

Lieutenant-Colonel Story's party, I detailed a hospital assistant. There were several medical officers with the European portion of the force, of which this detachment formed a part. On 8th December, the *Malda* reached Malacca, which was found to be in no apparent danger: but as it was feared that a small detachment of Her Majesty's 10th Foot, at Rassa, in the adjoining State of Sungie Yujong, would be overpowered, the force was ordered to proceed at once to its relief. A detachment of 100 men of 1st Goorkhas, under Captain Rankin, remained at Malacca, and with them I left Surgeon Bomford and a medical pupil. The same night the remainder of the force sailed in the *Malda* for the mouth of the Lukut river, some 30 miles north of Malacca. In the morning, 100 men were despatched under Lieutenant-Colonel Hill, by river 2 miles and jungle-path 16 miles, to Rassa. As coolies were not available, this party took nothing but their arms and ammunition, and, at my recommendation, their water-proof sheets. They reached Rassa the same night, after a severe march.

Arrival at Malacca.

One hundred men despatched to Rassa.

Advance up the Lukut river.

Next morning, a number of coolies having been collected, the rest of the troops, with the smallest possible quantity of baggage, left the *Malda* in boats, which were towed by a small steamer up the Lukut river. This stream is about 150 yards wide at the mouth, but narrow above, and is only navigable as far as Lukuta—a distance of 2 miles. The water up to this point is salt, and the banks are covered with a dense jungle of mangrove, growing to the water's edge.

Obstructions met with.

Scarcity of coolies.

9. From Lukut, which was the residence of a friendly Rajah, to Rassa, the road was merely a path through dense forest. It was obstructed by fallen trees and crossed numerous streams and swamps, many of them waist-deep. Coolies were in barely sufficient numbers for the ammunition and provisions. Tents, of course, could not be carried, and the greater part of the medical stores had to be left behind. Each officer was allowed one coolie to carry his baggage; and there being no roads, every one had to march on foot.

Arrangements made for wounded men.

10. Shortly before reaching the halting place, a note was received saying that a number of wounded men of the 10th Foot required immediate assistance. I therefore went on with a small guard, and reached Rassa at 10 P.M. There I found 11 men of the 10th Regiment and 12 Arab auxiliaries badly wounded, but doing well, with the exceptions of one man of the 10th—shot through the spine, and an Arab—shot through the left lung. Both of these died, but all the others, including two gun-shot fractures of the thigh, recovered. Antiseptic (carbolic acid) dressings were used. Next morning the remainder of the force arrived, and were quartered in some Chinese houses and bamboo sheds.

Climate.

11. The climate here was mild and equable. The thermometer ranged from 80° to 84° F.; the atmosphere was saturated with moisture, the sky constantly cloudy, and showers of rain occurred almost daily. The troops were very healthy, and the wounded did well.

Force advance against Bukit Putus.

12. The enemy, having occupied a very strong position, about 10 miles distant, called Bukit Putus (the hill pass), on 18th December, the force consisting of—

Naval Brigade	33
Royal Artillery	34
10th Foot	45
1st Goorkhas	255
Arab Irregulars	70
TOTAL	437

moved forward in two columns,—one column, under Lieutenant-Colonel Clay, advanced by the direct road to the pass; and the other, under Lieutenant-Colonel Hill, by a path to the left, which was said to lead round to the rear of the enemy's position. Surgeon Bomford, who had arrived from Malacca, was detailed with the force under Lieutenant-Colonel Hill; and I accompanied that under Lieutenant-Colonel Clay. Surgeon Hoystead, A.M.D., remained in charge of the sick and wounded. Most of the officers and men were partially sheltered at night by kadjans (a kind of mat made from the leaves of the nipah palm). One of these afforded cover for 4 men, and 20 formed a cooly-load. On the 20th, Lieutenant-Colonel Hill having sent word that he was making good progress, Lieutenant-Colonel Clay moved forward to the foot of the pass, sending on Captain Charmer with a party to reconnoitre. Captain Charmer succeeded in surprising one of the enemy's stockades, and the rest of the force advancing, the other positions were abandoned by the Malays. The wounded were carried off, but six dead bodies were left behind.

Medical arrangements.

Shelter at night.

Men killed and wounded.

13. Our loss was one naik killed, one sepoy dangerously wounded (since dead)—both shot through the neck, and three sepoys slightly wounded by ranjows or bamboo spikes.

Bandhole. Terachee.

14. Next morning the force marched through dense forest to Bandhole—a fortified position which the enemy had abandoned. On 22nd we marched to Terachee, through a very fine valley, some 25 miles long and about half a mile wide. This valley was one vast sheet of rice, fringed with fruit trees, and flanked by hills some 2,000 feet high, wooded to the summit.

Junction of the entire force.

On the way we met Lieutenant-Colonel Hill's party, and the whole force occupied the village, or campong, of Terachee. Here there was excellent accommodation for all, in the deserted Malay houses. Fruit, poultry, and rice were abundant; and the health of the men was good.

On 24th December the sick and wounded men were left under a guard at Terachee, with all spare stores and ammunition. Surgeon Bomford remained in charge of the sick.

Digitized by Google

15. After a difficult march through forest-covered hills, Sri Menanti (the beautiful valley) was reached, and the Malays were found to have abandoned their positions. Christmas day was spent in bivouac. On 26th the force divided; 120 men, with 1 gun, under Captain Rankin, went on to Jompole—a small State some 25 miles further to the eastward; and the remainder returned to Terachee. I accompanied the force to Jompole, as a determined resistance was expected there. The route was through a country very similar to that already described. The Moar river and several smaller streams were forded, all flowing to the eastward, the hill range, in which was the Bukit Putus post, being the watershed of this part of the Peninsula. This march was a very severe one, as there had been no rain for two days, and the sky was clear; the heat was very great, and both officers and men were a good deal distressed. Qualla Jompole was found to be deserted, and was burned; and the troops returned to Terachee. Sri Menanti. Division of force.

16. On the day of our arrival, violent arterial hœmorrhage took place from the wound in the neck of the sepoy already referred to. I cut down upon, and secured, the bleeding vessel. This proved to be the occipital artery, which had been injured, but not divided by the bullet. The man had lost so much blood that he was very much exhausted; and in spite of stimulants, he died eight hours afterwards. Death of a sepoy from secondary hœmorrhage.

17. The force now returned by the same route to Rassa. There were still but few men so sick as to require carriage. A detachment of 150 men being left at Rassa, under Lieutenant-Colonel Hill, the remainder proceeded in boats down the Linghy river to Malacca. Surgeon Bomford remained in medical charge of the Rassa detachment. Return of force to Rassa.

The course of the Linghy is through the densest forest. The trees are, many of them, of enormous size, the foliage often meeting overhead. The navigation is much impeded by fallen trunks. The tide flows about 6 miles up the river, for which distance the banks are thickly wooded with mangrove. On leaving the mouth of the river, which is there nearly a quarter of a mile wide, the small steamer grounded and the boats had to be cast off. The wind rising, the hospital boat was blown on shore, and was got off with difficulty but without serious damage.

18. Malacca was reached on 6th January. This is one of the oldest European settlements in the East, having been taking by the Portuguese in the 16th century. In the ruined church are tombstones of 1578. This place is very healthy for the tropics, and fevers are rare. The climate is moist and equable, but relaxing. The heat is tempered by frequent showers and by the sea breeze. The maximum temperature during the month of January was 87° F. and the minimum 73° F. The daily range was from 6 to 8 degrees. The soil in the neighbourhood is alluvial, and much of it swampy. There are several low hills of laterite formation close by. During our stay here, the health of officers and men was good. Arrival at Malacca. Description of Malacca.

19. On 23rd January, the 1st Goorkha Regiment was ordered to join the force under Brigadier General Ross, C. B., on the Perak river, and was embarked on board the transport *Arabia* next day. The mouth of the Larut river was reached on the 25th; and the regiment was taken in a small steamer some three miles up the stream to Mattang, the port of Larut. This place is built in a mangrove swamp, and is but a few inches above the level of high tides. In order to consolidate the ground sufficiently for roads and building purposes, the mud is dug up in the neighbourhood and heaped upon the spot to be raised. The framework of the houses is of poles or bamboo, and the walls and roof of thatch (atap). The Malay houses are built on poles six feet above the ground; those of the Chinese are not so, but they have raised bed-places three or four feet high. Even the Chinese pig-styes are built on posts three or four feet above the ground. Goorkha regiment joined the force under Brigadier General Ross, C. B.

20. The excavations above referred to, which are full of stagnant water, receive all the filth of Mattang, until a high tide carries part of it away. The situation is one which, according to theory, should be pestilential; but there is not much sickness, and malarious fevers are comparatively rare. The weather had now become hotter, as there had been no rain for more than a week, and marching even in the morning was trying. The country was not very different to that near Malacca, but was rather more hilly. The mangrove swamps of the coast were succeeded by forest, and the mud by stiff clay. The low hills were most of them of laterite, and the higher ones of granitic formation; all were covered with forest. Insanitary condition.

21. Qualla Kangsa (mouth of the Kangsa), the head-quarters of the Larut Field Force, was reached in two marches, the latter of which was very trying. Five men fell out with symptoms of heat apoplexy; three of them, however, were well in a day or two, and all eventually recovered. This place is at the confluence of the Kangsa and the Perak, and is about 20 feet above the level of the rivers. The neighbouring country is hilly, well wooded, and picturesque. The Perak is here about 200 yards wide, and only fordable when very low. Officers and men were quartered in atap huts, which afforded good shelter; but the escort duty, which was severe, and which involved considerable exposure, soon told upon the health of the men, and dysentery became very prevalent. Description of Qualla Kangsa.

22. A short time before the arrival of the regiment at Qualla Kangsa, an action had taken place at Kota Lama, in which were engaged the Buffs, Naval Brigade, and a party of 1st Goorkhas, from Lieutenant-Colonel Story's detachment, under Captain Young. Here Major Hawkins, Brigade-Major to the force, two sailors and one sepoy were killed and two sepoys wounded. On February 4th, a force of 150 men, 1st Goorkhas, under Lieutenant-Colonel Hill, was ordered out to destroy the villages of Ingha and Prek, on the opposite bank of the river, in which the people of Kota Lama had taken shelter. A party of the Buffs, with a half battery of artillery, marched up the right bank, and a portion of the Naval Brigade, Fight at Kota Lama, and casualties there.

Digitized by Google

with a gun and rocket boat, went up the river in support. The force advanced through alternate paddy fields and forest to Ingha, where some shots were fired by the enemy, who were hidden in gardens; a number of them, however, being seen from the gun-boats, some shells and rockets were sent amongst them, when they disappeared. The village was fired, and the force bivouacked in the neighbourhood. The night was very damp and chilly, with a very heavy dew, and a thick fog enveloped the place in the morning. Many cases of dysentery and fever were the result of this night's exposure.

March to Prek and its destruction.

Next morning, leaving 50 men at Ingha, the remainder of the force marched to Prek. About half way, where the path wound round the foot of a forest covered hill, we were received with a volley by the enemy, who were concealed in the thick jungle only a few yards off. Fortunately, little harm was done. Lieutenant-Colonel Hill was struck by a bullet on the leg, but it did not penetrate his gaiter; and one of the sepoys had his rifle sling shot through, while another bullet struck his pouch and flattened itself amongst his ammunition. A party was at once sent into the jungle, and the enemy retreated, firing a few shots as they went. At Prek there was a slight resistance, but no casualty. The village was destroyed, and the troops returned to Qualla Kangsa.

Increase in temperature.

The heat now became much greater. Little or no rain had fallen for three weeks. The Perak fell rapidly, till it became easily fordable. The maximum thermometer showed 96°-97°F. in the Officers' bungalows, and in the sun 135°F. and upwards. Dysentery and fevers were very prevalent.

Nostalgia.

Nostalgia now began to affect the sepoys, and was increased by rumours that the regiment was to be kept in the country for another year. The men made no complaints, but fell into low spirits, and fancied they should all die away from home.

Rain fall.

At last, on 25th February, rain fell, and from that time heavy showers occurred every evening. The heat became less trying, and the thermometer fell to 93°F. and soon after to 91°F.; the sickness then rapidly diminished.

Orders to return to India, and embarkation of the force.

23. On 8th March, orders were received for the troops to return to India, and I was directed to proceed with all the native sick on board the transport *Czarewitch* lying off the Larut river.

Wounds	...	...	1
Fevers	...	...	21
Dysentery	...	...	20
Boils, &c.	...	...	1
Other diseases	...	...	12
	TOTAL	...	55

On 10th, I embarked with 55 sick, as per margin. On 19th, the whole force having embarked on board the steam ships *Himalayah* and *Arabia* and the store ship *Czarewitch*, sailed for India. On the voyage most of the sick improved, but sea-sickness interfered very much with their recovery, by preventing the weakly men from gaining strength. On 21st March a sepoy died of chronic dysentery and was buried at sea. On 31st the sick, immediately on their arrival in Calcutta, were sent off by rail from Howrah. After landing, almost all the sick and weakly men rapidly recovered their health; but several cases of fever occurred during the journey, especially at Meerut, where the night was very chilly. On the march from Jullundur to Dhurmsala heavy rain fell, and several cases of fever and dysentery, and one of pneumonia, were the result. On 15th April the regiment reached Dhurmsala. Since their return to India, several of the men who suffered from fever and dysentery in the Malay Peninsula, have had a return of these complaints; and some, who were well throughout the compaign, have since been attacked by these diseases.

Good results from the expedition being formed in the healthiest season of the year.

24. It was most fortunate that the operations commenced at the best and healthiest time of the year. The troops landed in Sungie Yujong on 10th December, and in Perak a few days earlier. The weather was then at its coolest, showers occurred daily, and the sky was frequently cloudy for the greater part of the twenty-four hours. The atmosphere was almost saturated with moisture, and violent exercise caused profuse perspiration; but when cloudy it was possible to march considerable distances without exhaustion. Not only was there very little sickness, but the wounded men, both of Her Majesty's 10th Foot and of the Arab auxiliaries, made unusually good recoveries. When the sun was not obscured by clouds, the solar heat was great, and marching was very fatiguing, especially as the paths were generally obstructed by fallen trees, or disappeared in swamps. So far as I could ascertain, this cloudy, showery weather lasts usually from early in November till the middle of January. From this time until the setting in of the south-west monsoon, late in March, rain falls but seldom, the heat increases, and the difference between daily and nightly temperature becomes much greater. At this time the nights become chilly, dews heavy, and, near rivers and swamps, dense night fogs are common. It is then dangerous to health for troops to bivouac in the open. During the interval, between the ending of the south-west, and setting in of the north-east, monsoon, the climate is hot and comparatively dry. Near the coast, the climate is always more equable than in the interior, and fogs are rare. Here, too, the neighbourhood of swamps appears to be comparatively free from danger at all times. Malacca, surrounded on three sides by marshes and paddy-fields, is a very healthy place; and Mattang, the port of Larut, which is built in a mangrove swamp, is said by the officials resident there not to be unhealthy. Certainly few, if any, cases of fever originated there amongst the troops.

Climate of the Malay Peninsula.

25. Although the climate of the Malay Peninsula is a comparatively healthy one for the tropics, Europeans who have lived there for some time are generally pallid and anæmic; and medical men of experience in the country consider that immediate change to a cooler climate is necessary when any serious illness occurs. Even amongst the sepoys, those who had suffered from fever or dysentery gained strength very slowly, and were very subject to relapses. The Goorkhas appeared to feel the climate almost as much as their European Officers,

Digitized by Google

and, however lightly they were clad, their clothes were on the march generally soaked with perspiration. The leeches, of which we had heard a great deal, were not very troublesome, except in the jungle on the banks of the rivers. The food resources of the country are but limited. Cattle are seldom seen except near the European settlements. They are all imported, and are chiefly used by the Kling (Madrassee) settlers for draught purposes. Buffaloes are in considerable numbers, and are killed for beef for the European troops; but they are expensive, and the meat is hard and indigestible. Goats are scarce, and sheep do not exist. Poultry is tolerably plentiful. Rice is the only grain cultivated, and with fish and fruit forms the food of the Malays. The Chinese live chiefly upon rice, fish and pork; but pigs are only obtainable near their settlements, as the Malays are all Mahomedans. Food resources of the country

26. Free rations were supplied to the men on board-ship according to the scale laid down in the Transport Regulations, *viz.*,— Free rations.

	Cooking ration. lbs.	oz.		Non-cooking ration. oz.
Atta	1	4	Choora (parched rice)	12
Dall		4	Chubena (parched gram)	10
Turmeric		0½	Ghee	2
Onions		0½	Salt	1
Garlic		0½	Sugar	6½
Chillies		0½	Tamarind	4
Black pepper		0½	Chunam	0½
Ghee		1	Kuth	0½
Salt		1	Tobacco	2
Sugar		2		
Chunam		0½		
Kuth		0½		
Tobacco		2		

Followers received three-fourths of the above. Non-cooking rations were only issued for two days—on the outward voyage.

On shore, the rations were on the Abyssinian scale, *viz.*,—

	Sepoys. lbs.	oz.	Followers. lbs.	oz.
Atta	2	0	1	8
Dall		4		4
Ghee		2		1
Salt		0½		0½
Tobacco		1½		0
Pepper		0½		0
Turmeric		0½		0
Chillies		0½		0

Under the orders of Brigadier-General Ross, C.B., each sepoy was allowed 2 lbs. of goat's flesh once a week, and half a dram of rum daily.

There was no appearance of scurvy, and all the men who escaped sickness gained flesh considerably. This was owing to the good quality of the rations, and to there being no families to share them, as well as to the great abundance of fruit. Had fruit been less easily procurable, it would probably have been necessary to add to the ration an allowance of vegetables, vinegar, or lime juice. No appearance of scurvy.

27. The only diseases of importance which prevailed amongst the troops were dysentery and fever. Amongst the people of the country, the most common complaints appear to be those usually met with in India. Outbreaks of cholera occur occasionally. Small-pox is well known, but inoculation, I was told, is not practised. Leprosy and several forms of skin disease are prevalent; chest affections are rare, but bowel complaints are very common. Diseases of importance.

28. I have alluded to the increase of sickness amongst the sepoys, on the arrival of the regiment in Perak, in the month of January. This I attribute to the setting in of the hot season. There had been very little rain for 15 days, and the heat was very trying, while the night fogs at this time were very dense and penetrating. The escort duty, too, upon which the men were chiefly employed, involved great exposure. I am aware that the river water was blamed for the prevalence of the same forms of disease amongst the European troops at that time. The sepoys, however, did not drink the river water, but dug two bowlees (small wells) for themselves in a ravine near the camp, and the water of these was good. The sickness, moreover, diminished amongst the Europeans when they were less exposed. When the showers returned, on 25th February, the heat became less, the fogs disappeared, and the health of the troops improved rapidly. Explanation of the increase of sickness at Perak in January. Sepoys used water from wells.

29. The sick and weakly men were left behind whenever it was possible; and, fortunately, during the operations in the interior, the number to be carried was comparatively small. It was so difficult to procure carriage of any kind, that to have conveyed any considerable number of sick or wounded men would have been most embarrassing. Disposal of the sick.

Doolies of the new pattern were supplied to the force; but, except between Qualla Kangsa and the coast, where a road was made, they could not be used. In Sungie Gujong I tried, at first, sailors' hammocks slung upon poles taken from the doolies. These I afterwards supplemented by stretchers made of two light poles, with crossbars at head and foot, the intervening space being filled up with interlaced rattans. A few split bamboos bent over these, and covered with a blanket or water-proof sheet, formed a shelter from sun or rain. Each stretcher was carried easily by four Chinese coolies. Doolies of but little use.

Digitized by Google

Supply of medicines, &c., was ample.

The supplies of medicines and hospital requirements were ample, and I was able to supply the wants of the European and auxiliary troops attached to the Malacca column. Some of the packages were rather large and heavy for coolie carriage in a country without roads. Water-tight cases of tin or zinc petarrahs are best adapted for such a climate; nothing else will keep out the drenching rain. The panniers and field companions were very convenient for detachments and for use in the field.

The condensed milk was most useful.

30. As milk was not procurable, it was at first difficult to provide nourishing food for the sick sepoys, especially for those suffering from dysentery; but they soon took a great fancy to the condensed milk in tins. The supply of this was, of course, limited; but I believe that its use saved several lives. I would suggest that a moderate supply be allowed in expeditions to countries where, as in the Malay Peninsula and China, fresh milk is not obtainable.

Report on medical establishment.

31. Surgeon G. Bomford, who was attached to the force, was everything that I could wish. He was always active, cheerful under hardships, and careful of the sick. All the hospital establishment behaved very well indeed; and, owing to the number of detachments, the subordinates were often placed in responsible positions.

Statistics.

Of the 10 European Officers attached to the regiment, 2 were invalided (one for dysenteric diarrhœa, and the other for hepatitic congestion), both of whom have returned to duty. A third Officer, who suffered from hepatitis and dysentery, is still in a very bad state of health.

The sickness and mortality in the 1st Goorkhas, while absent from India, from 26th November 1875 to 31st March 1876, was—

	Admitted.	Discharged.	Died.	Remaining.	
Killed in action	...	...	2	...	...
Wounds	5	3	1	1	...
Fevers	108	101	...	7	
Dysentery and hepatitis	62	57	3	2	
Boils and ulcers	17	15	...	2	
Chest affections	1	1	...	...	
Other diseases (chiefly foot-sore)	114	112	...	2	
TOTAL	307	289	6	14	...

Admissions ... 66·75 per cent.
Deaths ... 1·29 „

During the month, since the return of the regiment to India, the following cases of sickness have occurred in men who were on service in the Malay Peninsula :—

	Admitted.	Discharged.	Died.	Remaining.	
Fevers	35	25	...	10	
Dysentery and hepatitis	11	8	1*	2	* Died in Calcutta, having been too ill to travel up-country with the regiment.
Boils and ulcers	8	5	...	3	
Chest affections	1	1	...	...	
Other diseases (chiefly foot-sore)	45	27	...	18	
TOTAL	100	66	1*	33	

Twenty-four cases of fever and four of dysentery were re-admissions of men who had suffered from these diseases in Malaya.

Govt. Central Press.—No. 73 J. M. D.—15-1-77.—280.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google